US006374240B1

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Walker et al.

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(45) **Date of Patent: Apr. 16, 2002**

(54) **METHOD AND APPARATUS FOR MAINTAINING A CUSTOMER DATABASE USING LICENSE PLATE SCANNING**

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(73) Assignee: **Walker Digital, LLC**, Stamford, CT (US)

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(51) **Int. Cl.**[7] **G06F 17/30**
(52) **U.S. Cl.** **707/5**; 707/104; 705/7; 705/15; 705/16; 705/37
(58) **Field of Search** 707/1–5, 6, 104; 705/7–11, 14, 26, 37, 15–16, 36; 701/117

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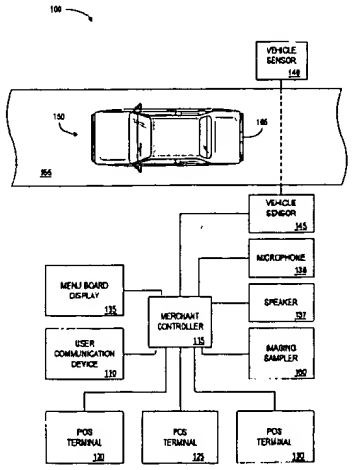
(57) **ABSTRACT**

An apparatus is provided for generating an image of a license plate and determining license plate characters from the image. Then, a database is searched to determine if there is a customer record that corresponds to the license plate characters. If so, the customer record is retrieved and information about the customer is available. Otherwise, a customer record is created. The created customer record corresponds to the license plate characters and stores transaction data that represents a transaction.

76 Claims, 23 Drawing Sheets



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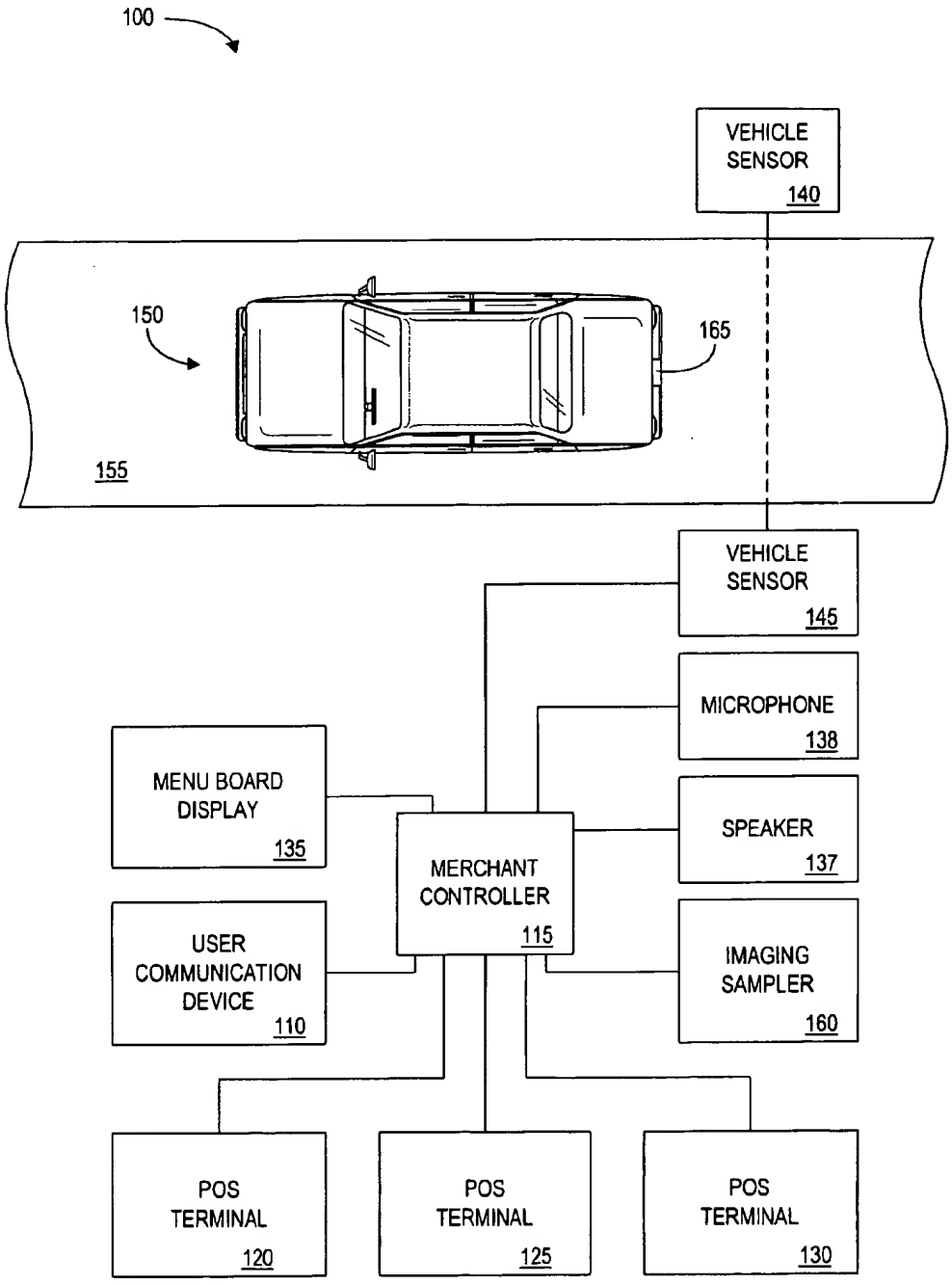
100
VEHICLE SENSOR 140
150
165
155
VEHICLE SENSOR 145
MICROPHONE 138
MENU BOARD DISPLAY 135
SPEAKER 137
MERCHANT CONTROLLER 115
USER COMMUNICATION DEVICE 110
IMAGING SAMPLER 160
POS TERMINAL 120
POS TERMINAL 125
POS TERMINAL 130

FIG. 1

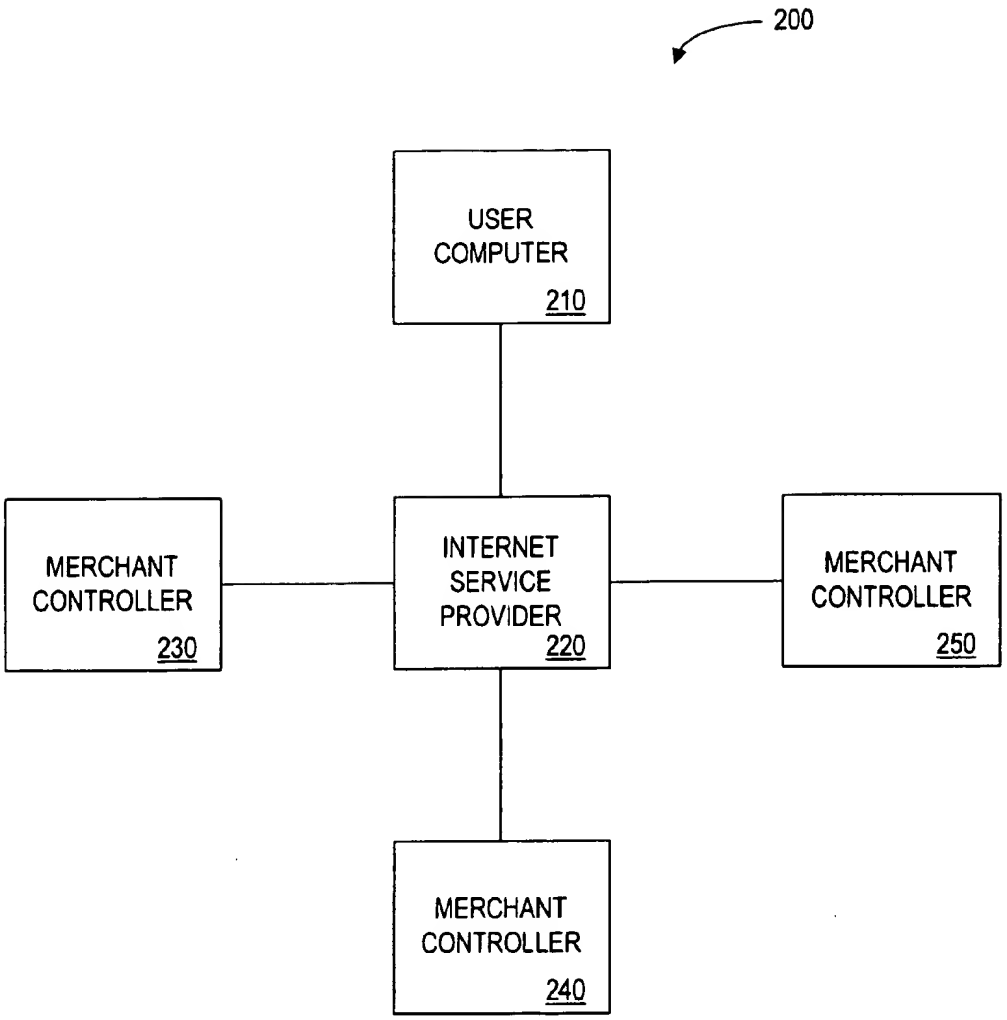
200
USER COMPUTER 210
MERCHANT CONTROLLER 230
INTERNET SERVICE PROVIDER 220
MERCHANT CONTROLLER 250
MERCHANT CONTROLLER 240

FIG. 2

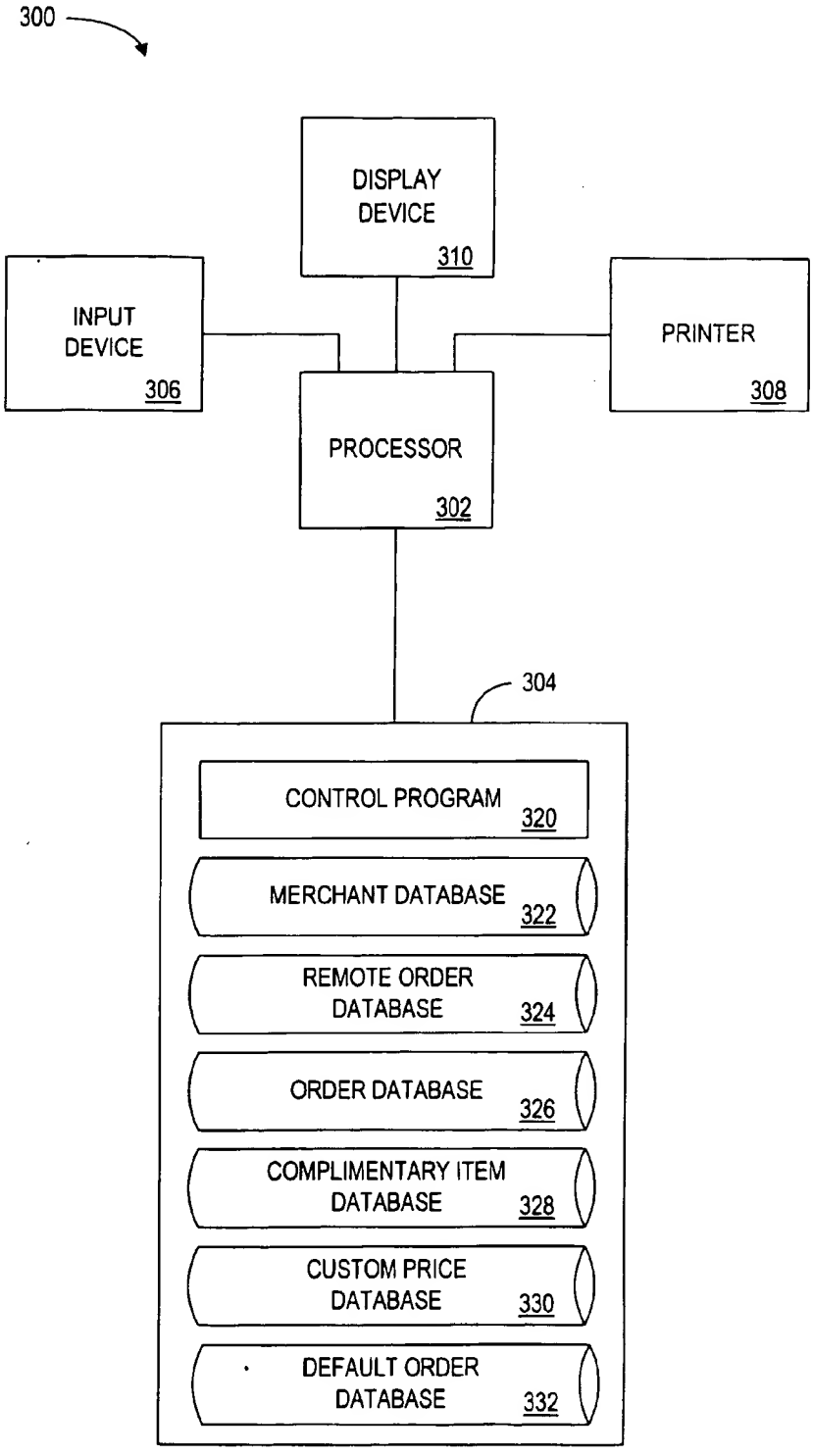
300
DISPLAY DEVICE 310
INPUT DEVICE 306
PRINTER 308
PROCESSOR 302
304
CONTROL PROGRAM 320
MERCHANT DATABASE 322
REMOTE ORDER DATABASE 324
ORDER DATABASE 326
COMPLIMENTARY ITEM DATABASE 328
CUSTOM PRICE DATABASE 330
DEFAULT ORDER DATABASE 332

FIG. 3

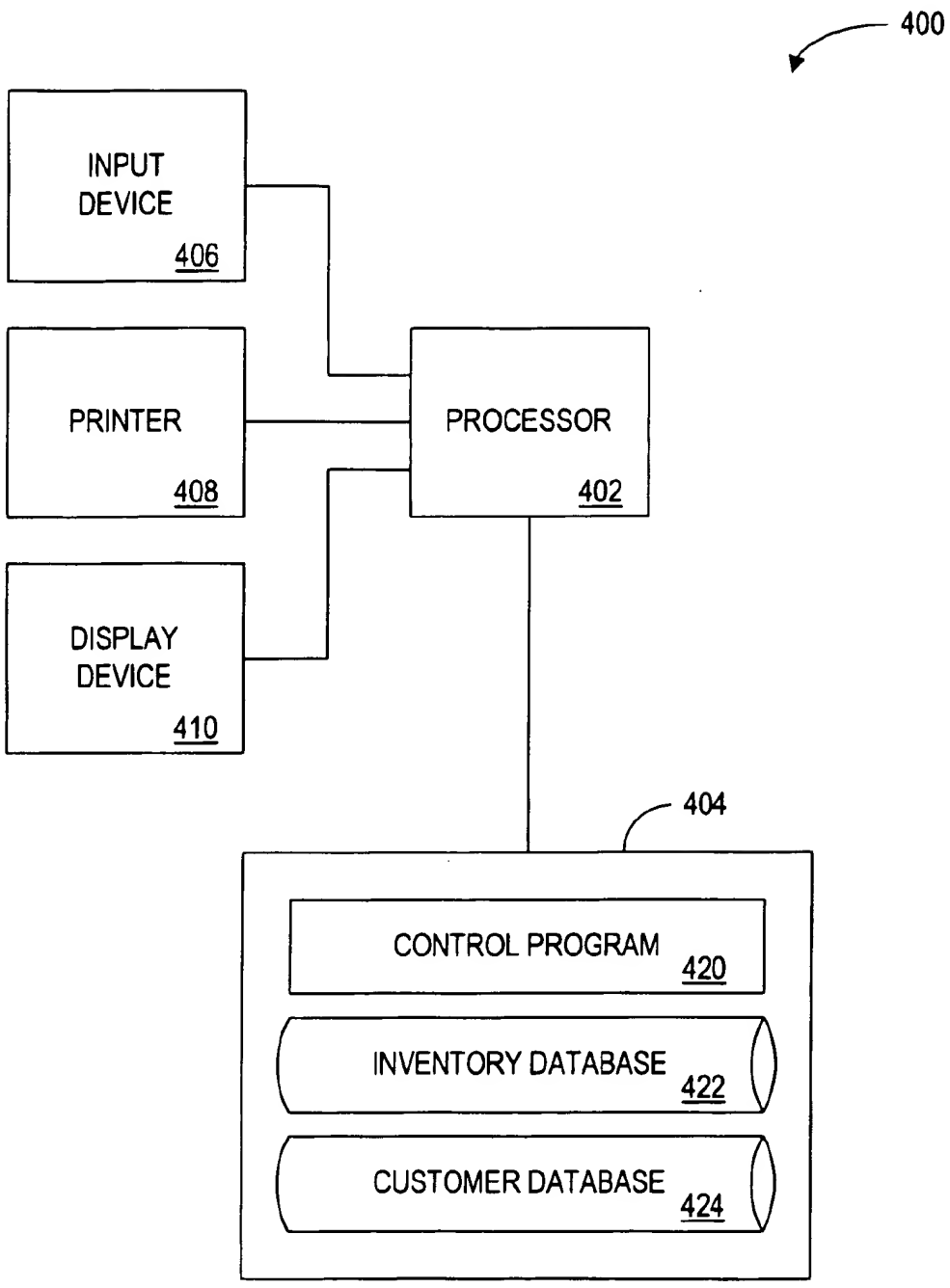
400
INPUT DEVICE
406
PRINTER
408
DISPLAY DEVICE
410
PROCESSOR
402
404
CONTROL PROGRAM
420
INVENTORY DATABASE
422
CUSTOMER DATABASE
424

FIG. 4

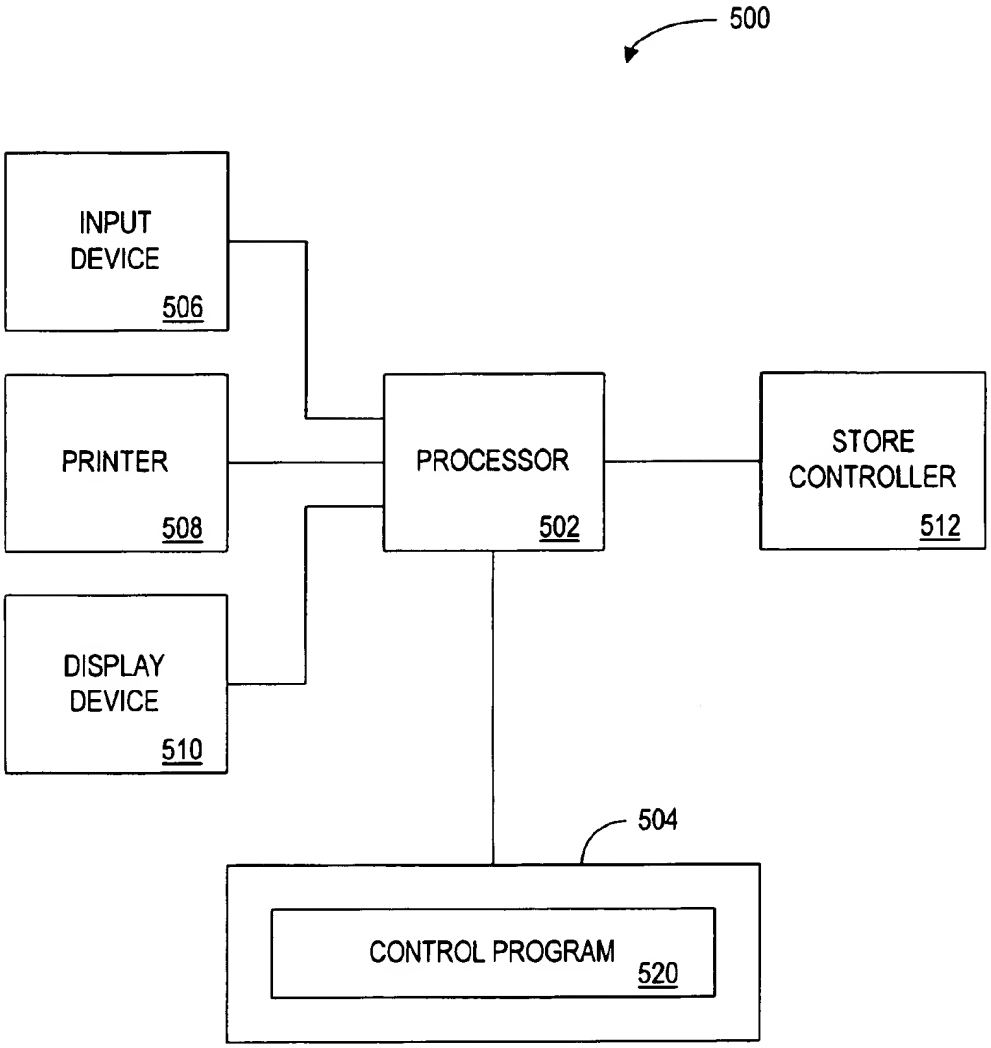
500
INPUT DEVICE
506
PRINTER
508
DISPLAY DEVICE
510
PROCESSOR
502
STORE CONTROLLER
512
504
CONTROL PROGRAM
520

FIG. 5

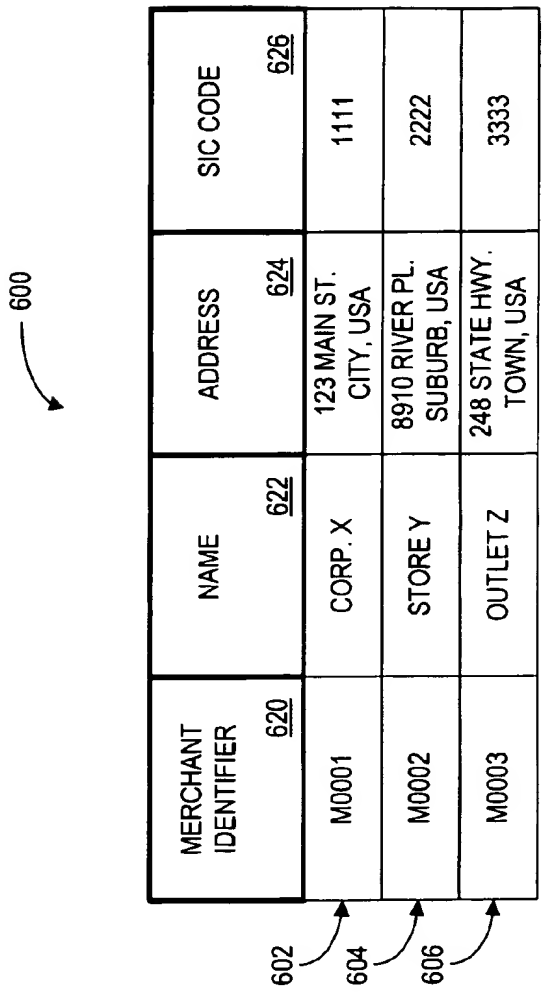
600
MERCHANT IDENTIFIER 620
NAME 622
ADDRESS 624
SIC CODE 626
M0001
CORP. X
123 MAIN ST. CITY, USA
1111
M0002
STORE Y
8910 RIVER PL. SUBURB, USA
2222
M0003
OUTLET Z
248 STATE HWY. TOWN, USA
3333
602
604
606

FIG. 6

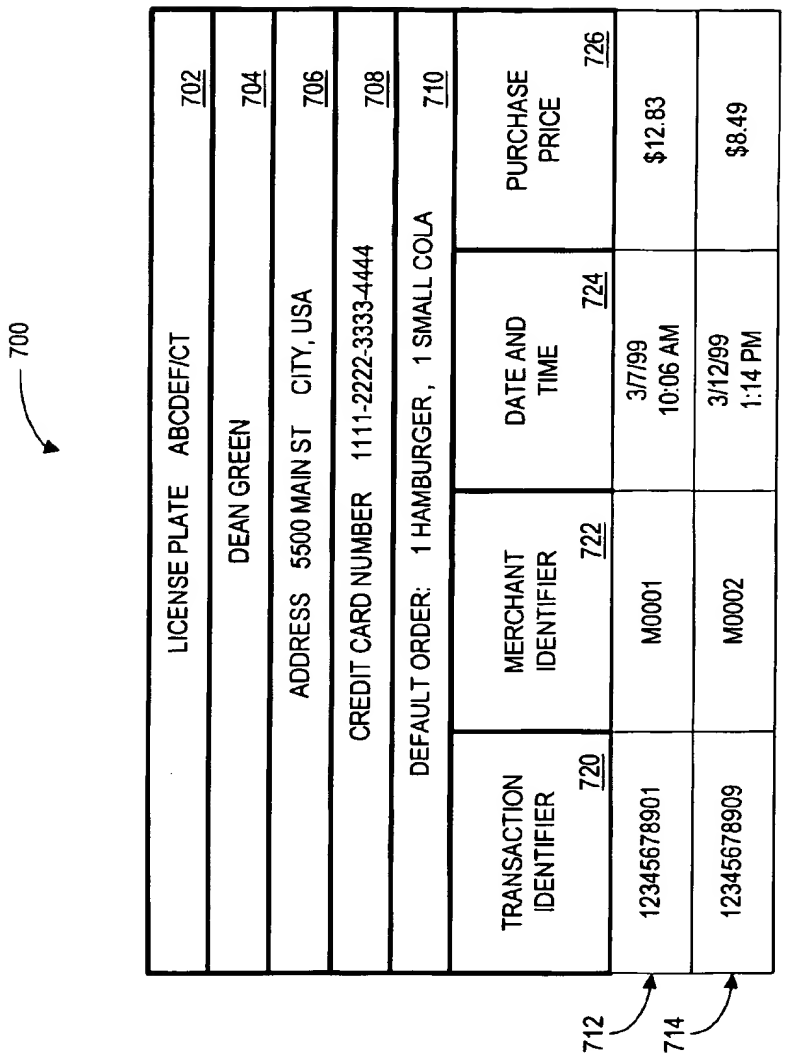
700
LICENSE PLATE ABCDEF/CT 702
DEAN GREEN 704
ADDRESS 5500 MAIN ST CITY, USA 706
CREDIT CARD NUMBER 1111-2222-3333-4444 708
DEFAULT ORDER: 1 HAMBURGER, 1 SMALL COLA 710
TRANSACTION IDENTIFIER 720
MERCHANT IDENTIFIER 722
DATE AND TIME 724
PURCHASE PRICE 726
12345678901
M0001
3/7/99 10:06 AM
$12.83
12345678909
M0002
3/12/99 1:14 PM
$8.49
712
714

FIG. 7

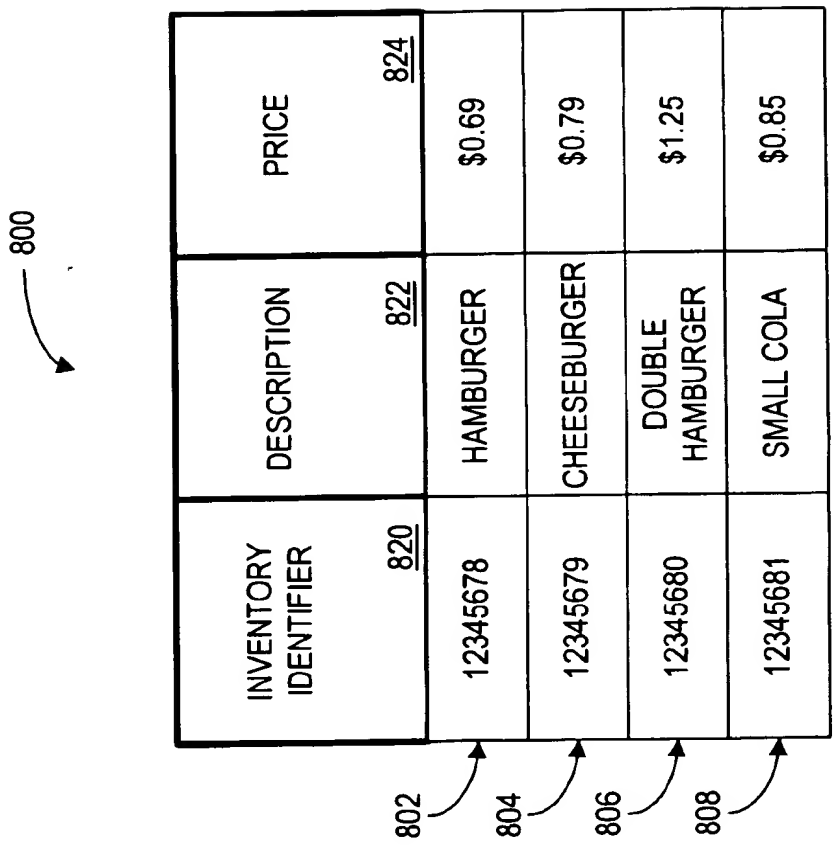
800
INVENTORY IDENTIFIER 820
DESCRIPTION 822
PRICE 824
12345678
HAMBURGER
$0.69
12345679
CHEESEBURGER
$0.79
12345680
DOUBLE HAMBURGER
$1.25
12345681
SMALL COLA
$0.85
802
804
806
808

FIG. 8

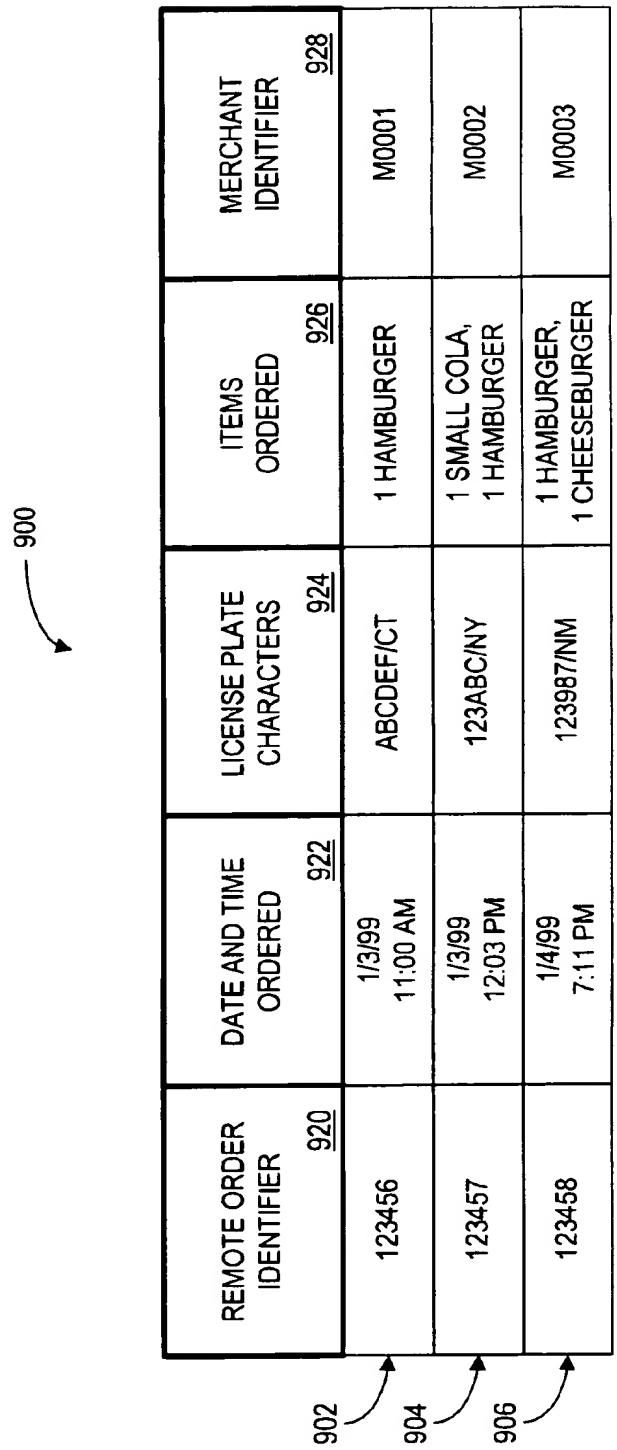
900
REMOTE ORDER IDENTIFIER 920
DATE AND TIME ORDERED 922
LICENSE PLATE CHARACTERS 924
ITEMS ORDERED 926
MERCHANT IDENTIFIER 928
123456
1/3/99 11:00 AM
ABCDEF/CT
1 HAMBURGER
M0001
123457
1/3/99 12:03 PM
123ABC/NY
1 SMALL COLA, 1 HAMBURGER
M0002
123458
1/4/99 7:11 PM
123987/NM
1 HAMBURGER, 1 CHEESEBURGER
M0003
902
904
906

FIG. 9

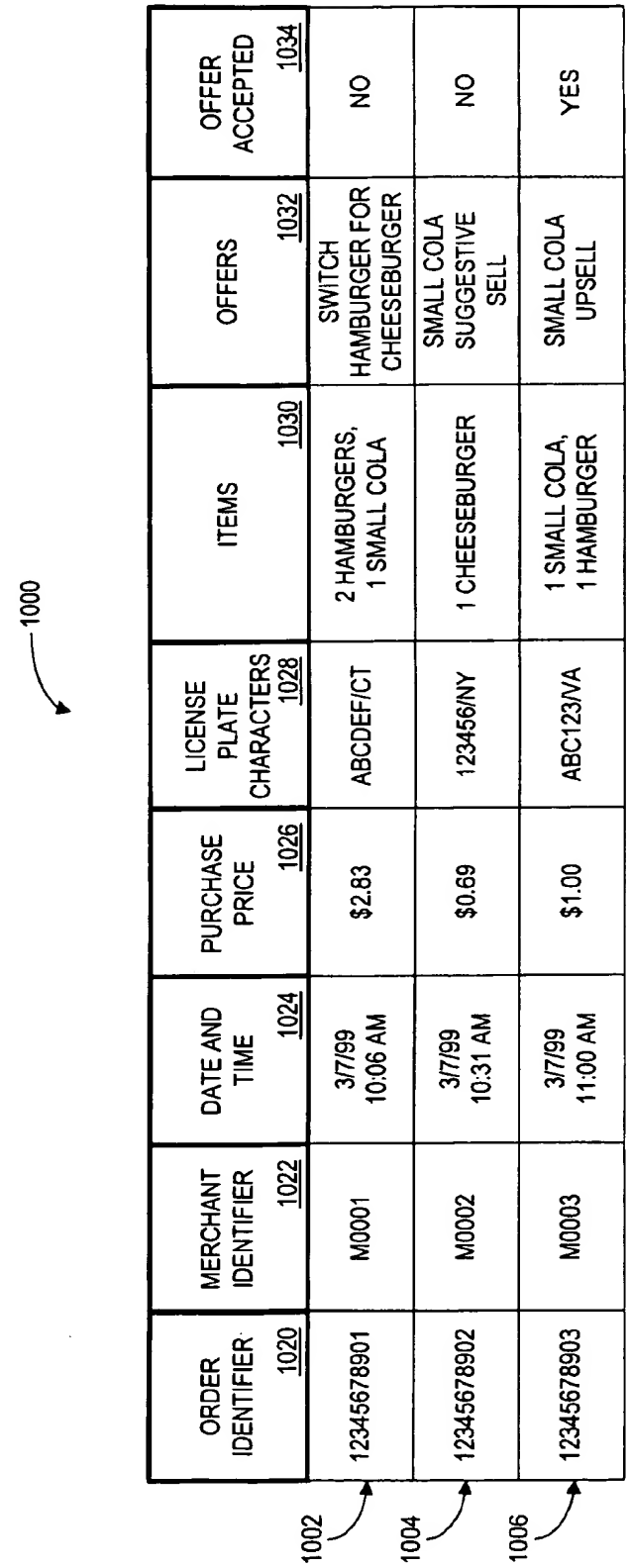
1000
ORDER IDENTIFIER 1020
MERCHANT IDENTIFIER 1022
DATE AND TIME 1024
PURCHASE PRICE 1026
LICENSE PLATE CHARACTERS 1028
ITEMS 1030
OFFERS 1032
OFFER ACCEPTED 1034
12345678901
M0001
3/7/99 10:06 AM
$2.83
ABCDEF/CT
2 HAMBURGERS, 1 SMALL COLA
SWITCH HAMBURGER FOR CHEESEBURGER
NO
12345678902
M0002
3/7/99 10:31 AM
$0.69
123456/NY
1 CHEESEBURGER
SMALL COLA SUGGESTIVE SELL
NO
12345678903
M0003
3/7/99 11:00 AM
$1.00
ABC123/VA
1 SMALL COLA, 1 HAMBURGER
SMALL COLA UPSELL
YES
1002
1004
1006

FIG. 10

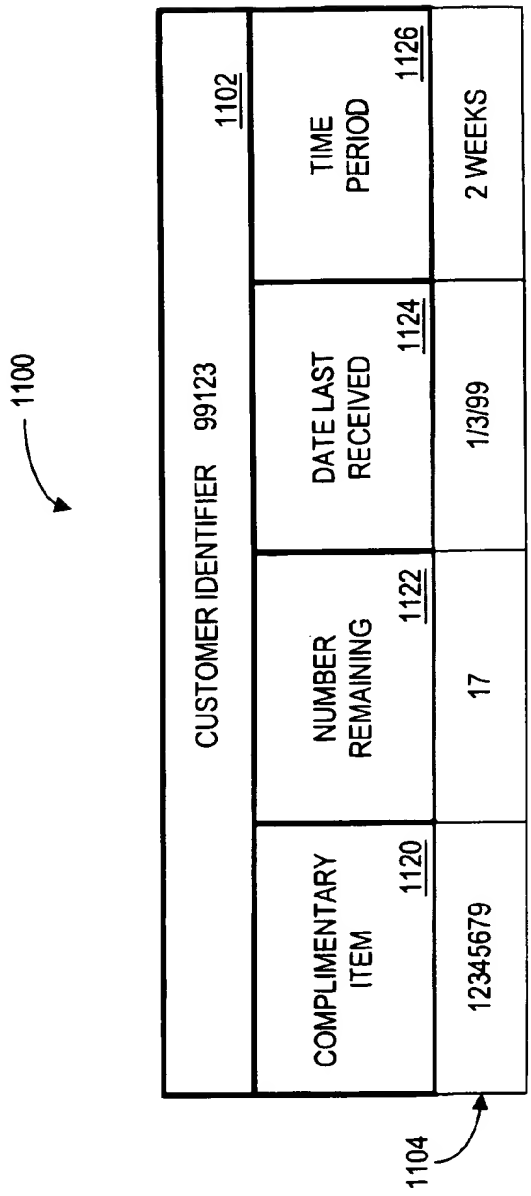
1100
CUSTOMER IDENTIFIER 99123
1102
COMPLIMENTARY ITEM
1120
NUMBER REMAINING
1122
DATE LAST RECEIVED
1124
TIME PERIOD
1126
12345679
17
1/3/99
2 WEEKS
1104

FIG. 11

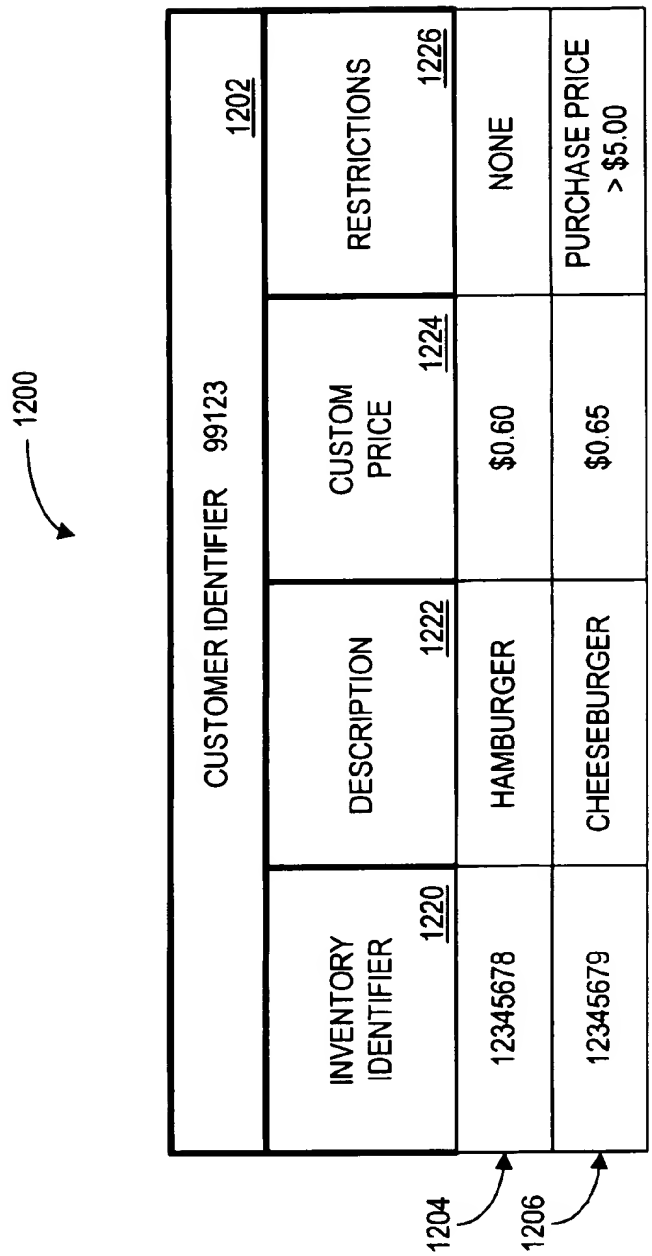
1200
CUSTOMER IDENTIFIER 99123
1202
INVENTORY IDENTIFIER
1220
DESCRIPTION
1222
CUSTOM PRICE
1224
RESTRICTIONS
1226
12345678
HAMBURGER
$0.60
NONE
12345679
CHEESEBURGER
$0.65
PURCHASE PRICE > $5.00
1204
1206

FIG. 12

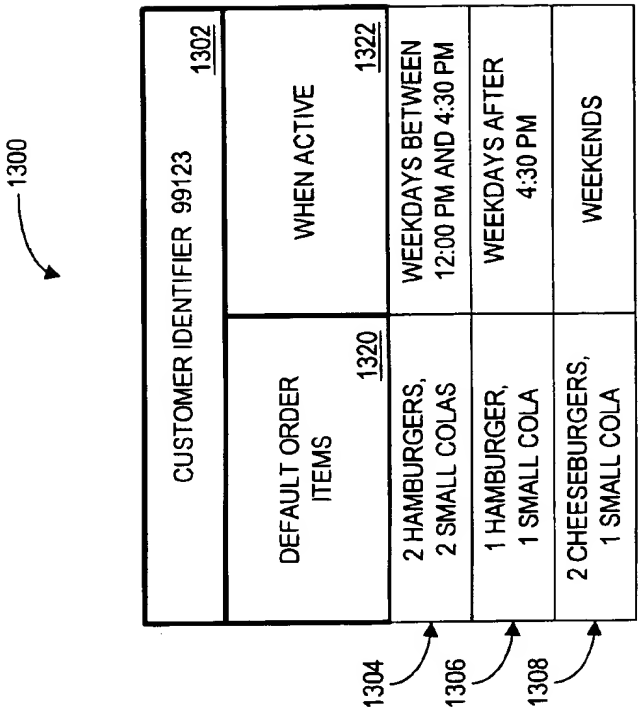
1300
CUSTOMER IDENTIFIER 99123
1302
DEFAULT ORDER ITEMS
1320
WHEN ACTIVE
1322
2 HAMBURGERS, 2 SMALL COLAS
WEEKDAYS BETWEEN 12:00 PM AND 4:30 PM
1 HAMBURGER, 1 SMALL COLA
WEEKDAYS AFTER 4:30 PM
2 CHEESEBURGERS, 1 SMALL COLA
WEEKENDS
1304
1306
1308

FIG. 13

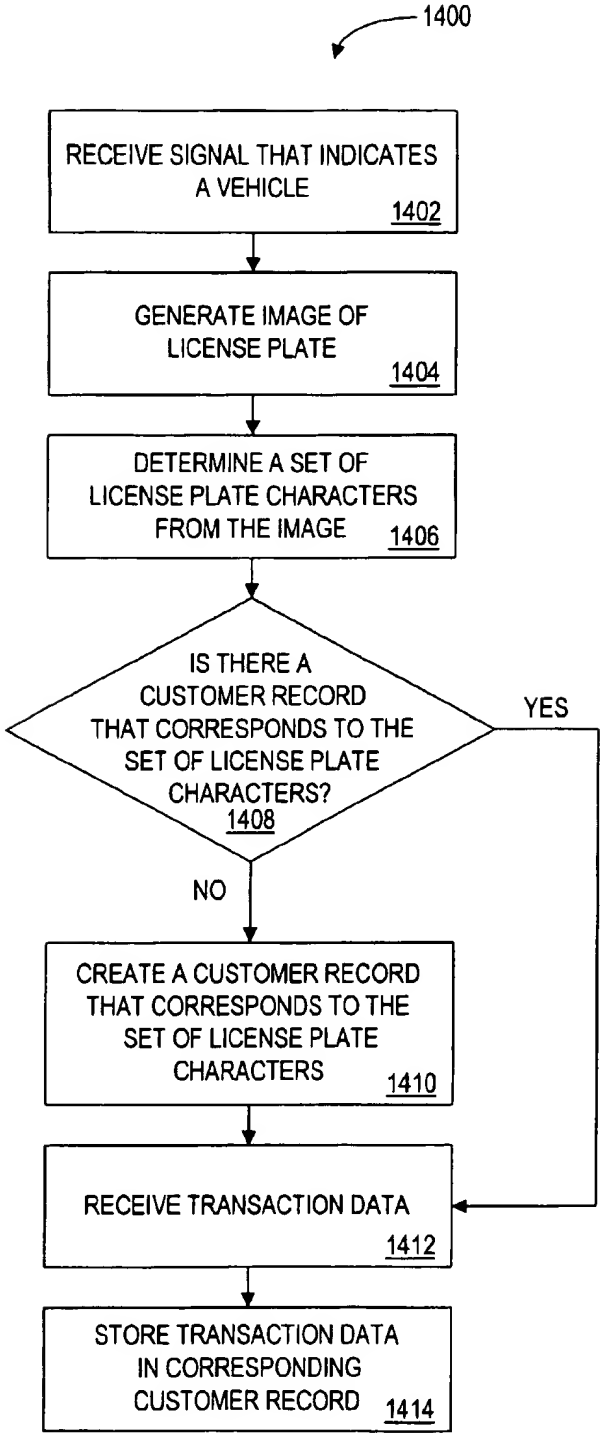
1400
RECEIVE SIGNAL THAT INDICATES A VEHICLE
1402
GENERATE IMAGE OF LICENSE PLATE
1404
DETERMINE A SET OF LICENSE PLATE CHARACTERS FROM THE IMAGE
1406
IS THERE A CUSTOMER RECORD THAT CORRESPONDS TO THE SET OF LICENSE PLATE CHARACTERS?
1408
YES
NO
CREATE A CUSTOMER RECORD THAT CORRESPONDS TO THE SET OF LICENSE PLATE CHARACTERS
1410
RECEIVE TRANSACTION DATA
1412
STORE TRANSACTION DATA IN CORRESPONDING CUSTOMER RECORD
1414

FIG. 14

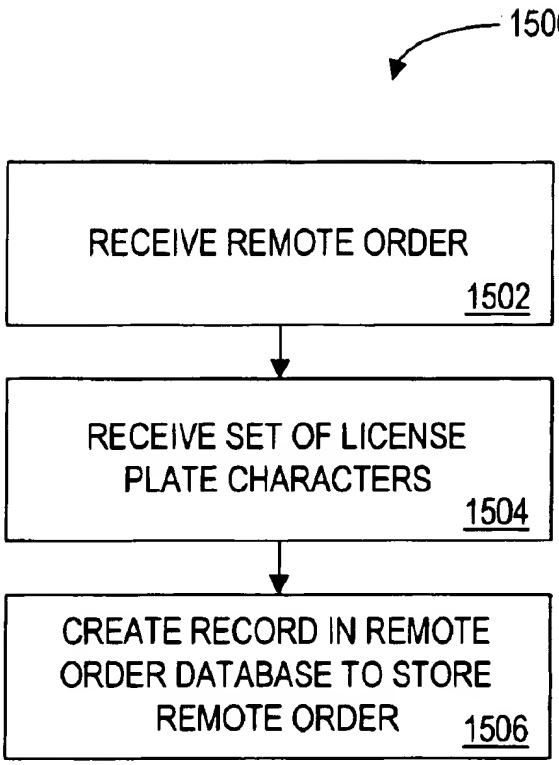
1500
RECEIVE REMOTE ORDER
1502
RECEIVE SET OF LICENSE PLATE CHARACTERS
1504
CREATE RECORD IN REMOTE ORDER DATABASE TO STORE REMOTE ORDER
1506

FIG. 15A

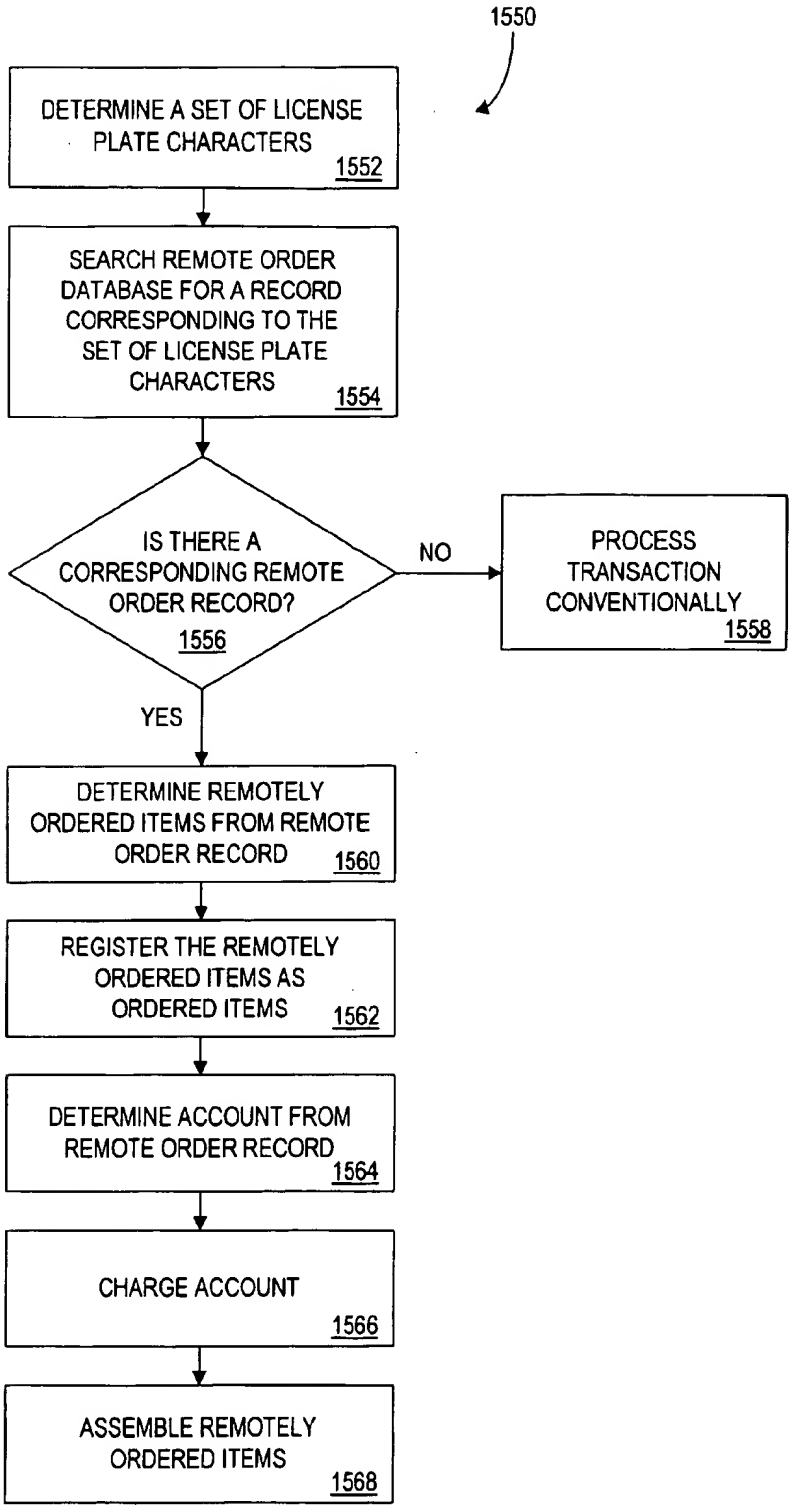
1550
DETERMINE A SET OF LICENSE PLATE CHARACTERS
1552
SEARCH REMOTE ORDER DATABASE FOR A RECORD CORRESPONDING TO THE SET OF LICENSE PLATE CHARACTERS
1554
IS THERE A CORRESPONDING REMOTE ORDER RECORD?
1556
NO
PROCESS TRANSACTION CONVENTIONALLY
1558
YES
DETERMINE REMOTELY ORDERED ITEMS FROM REMOTE ORDER RECORD
1560
REGISTER THE REMOTELY ORDERED ITEMS AS ORDERED ITEMS
1562
DETERMINE ACCOUNT FROM REMOTE ORDER RECORD
1564
CHARGE ACCOUNT
1566
ASSEMBLE REMOTELY ORDERED ITEMS
1568

FIG. 15B

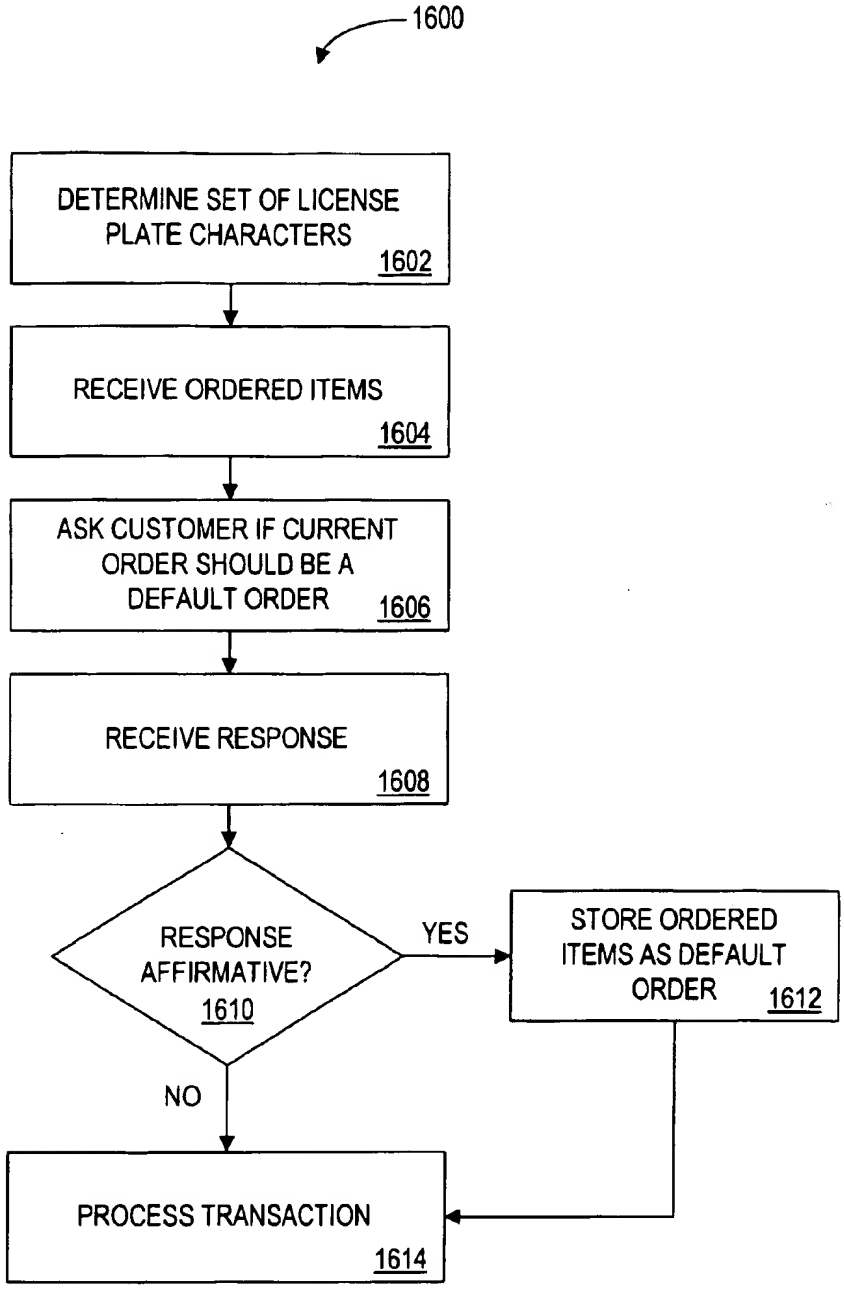
1600
DETERMINE SET OF LICENSE PLATE CHARACTERS
1602
RECEIVE ORDERED ITEMS
1604
ASK CUSTOMER IF CURRENT ORDER SHOULD BE A DEFAULT ORDER
1606
RECEIVE RESPONSE
1608
RESPONSE AFFIRMATIVE?
1610
YES
STORE ORDERED ITEMS AS DEFAULT ORDER
1612
NO
PROCESS TRANSACTION
1614

FIG. 16A

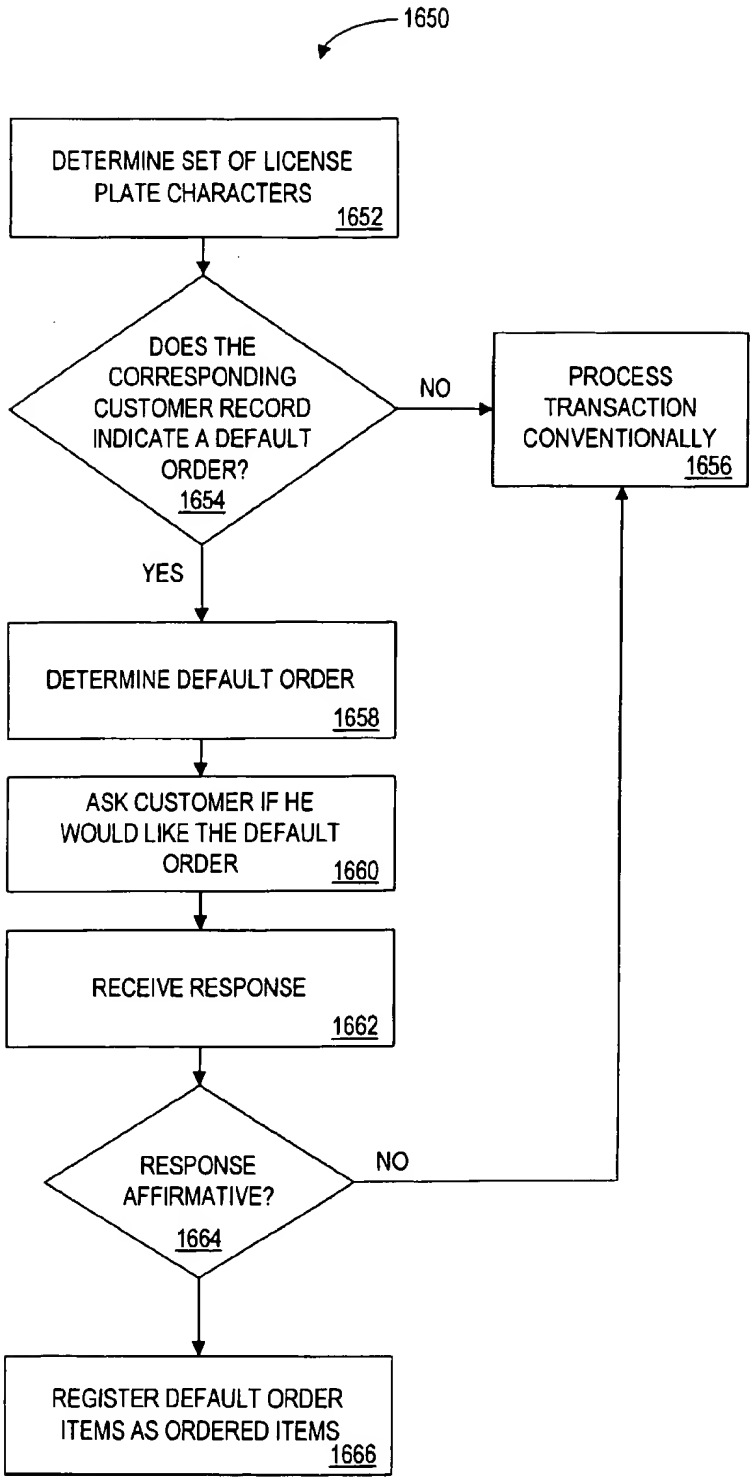
1650
DETERMINE SET OF LICENSE PLATE CHARACTERS
1652
DOES THE CORRESPONDING CUSTOMER RECORD INDICATE A DEFAULT ORDER?
1654
NO
PROCESS TRANSACTION CONVENTIONALLY
1656
YES
DETERMINE DEFAULT ORDER
1658
ASK CUSTOMER IF HE WOULD LIKE THE DEFAULT ORDER
1660
RECEIVE RESPONSE
1662
RESPONSE AFFIRMATIVE?
1664
NO
REGISTER DEFAULT ORDER ITEMS AS ORDERED ITEMS
1666

FIG. 16B

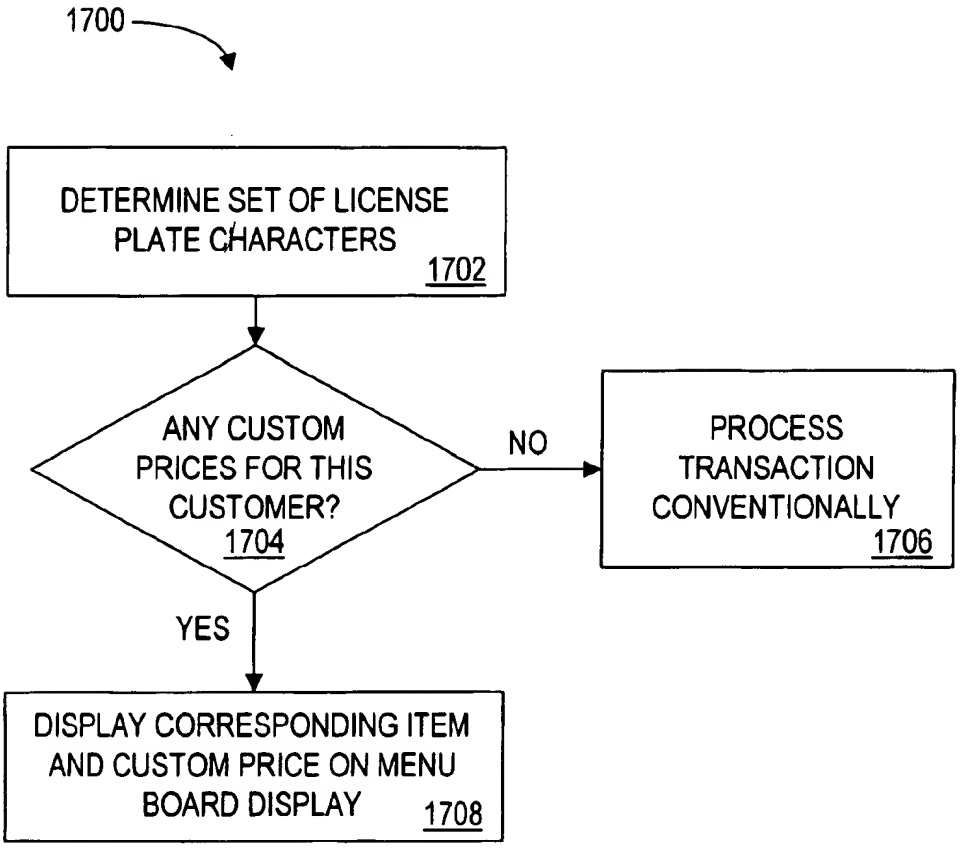
1700
DETERMINE SET OF LICENSE PLATE CHARACTERS
1702
ANY CUSTOM PRICES FOR THIS CUSTOMER?
1704
NO
PROCESS TRANSACTION CONVENTIONALLY
1706
YES
DISPLAY CORRESPONDING ITEM AND CUSTOM PRICE ON MENU BOARD DISPLAY
1708

FIG. 17

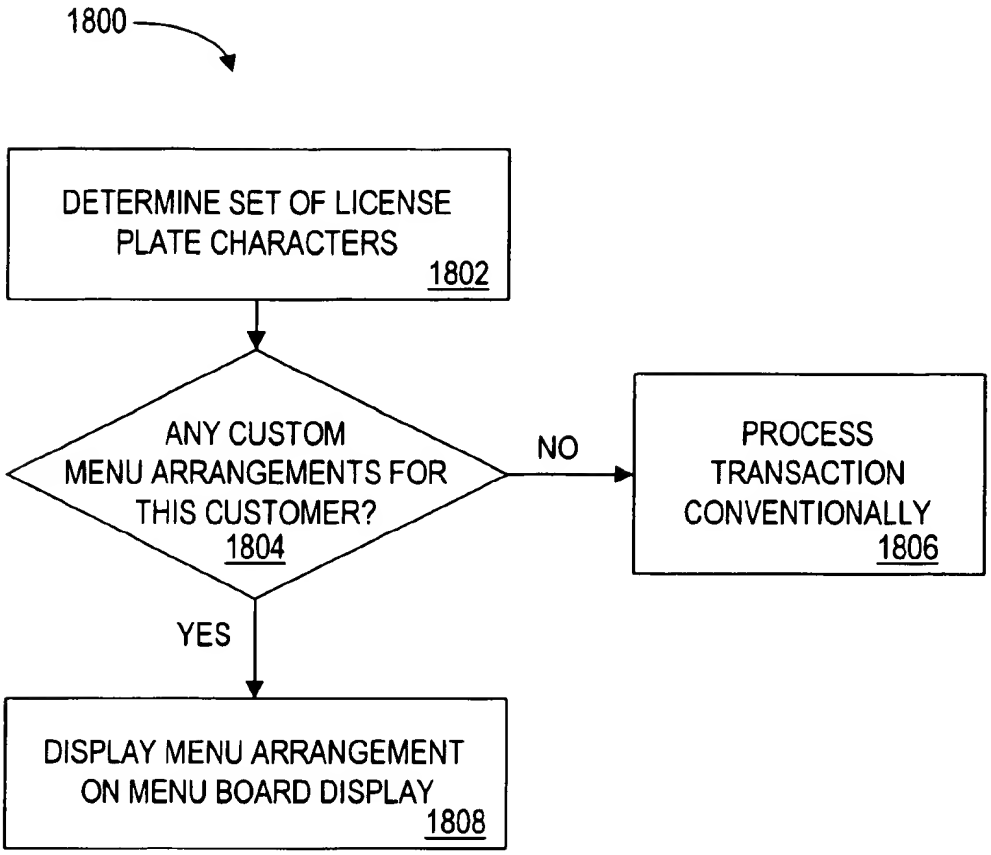
1800
DETERMINE SET OF LICENSE PLATE CHARACTERS
1802
ANY CUSTOM MENU ARRANGEMENTS FOR THIS CUSTOMER?
1804
NO
PROCESS TRANSACTION CONVENTIONALLY
1806
YES
DISPLAY MENU ARRANGEMENT ON MENU BOARD DISPLAY
1808

FIG. 18

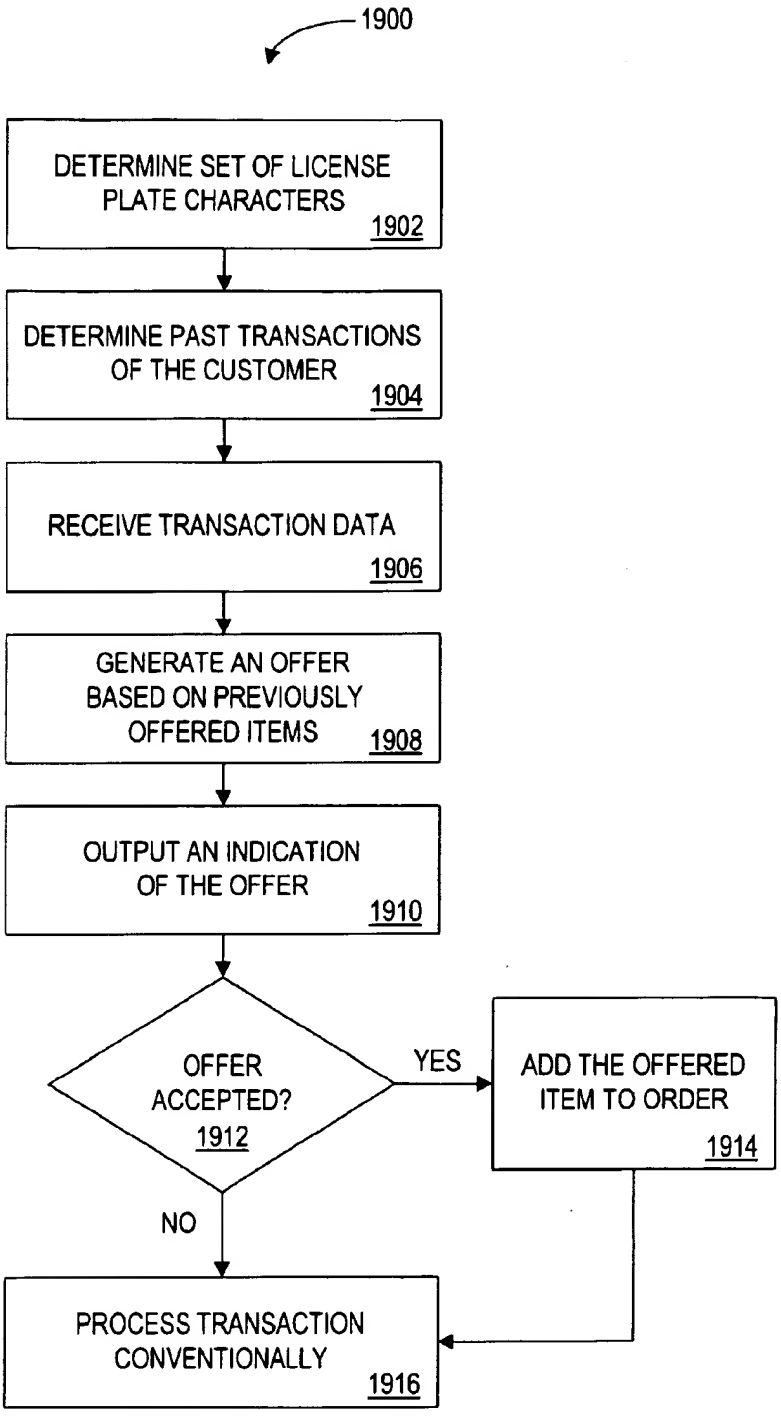
1900
DETERMINE SET OF LICENSE PLATE CHARACTERS
1902
DETERMINE PAST TRANSACTIONS OF THE CUSTOMER
1904
RECEIVE TRANSACTION DATA
1906
GENERATE AN OFFER BASED ON PREVIOUSLY OFFERED ITEMS
1908
OUTPUT AN INDICATION OF THE OFFER
1910
OFFER ACCEPTED?
1912
YES
ADD THE OFFERED ITEM TO ORDER
1914
NO
PROCESS TRANSACTION CONVENTIONALLY
1916

FIG. 19

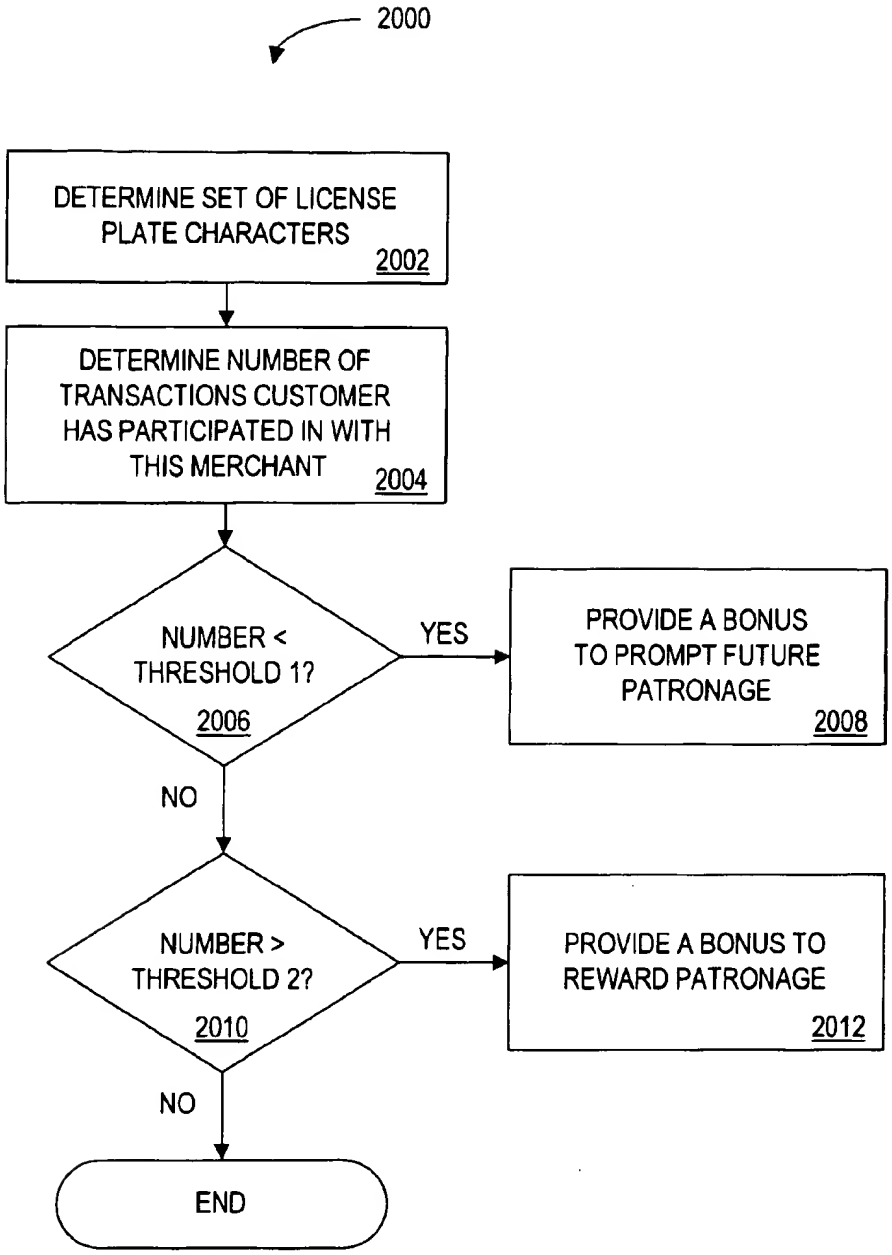
2000
DETERMINE SET OF LICENSE PLATE CHARACTERS
2002
DETERMINE NUMBER OF TRANSACTIONS CUSTOMER HAS PARTICIPATED IN WITH THIS MERCHANT
2004
NUMBER < THRESHOLD 1?
2006
YES
PROVIDE A BONUS TO PROMPT FUTURE PATRONAGE
2008
NO
NUMBER > THRESHOLD 2?
2010
YES
PROVIDE A BONUS TO REWARD PATRONAGE
2012
NO
END

FIG. 20

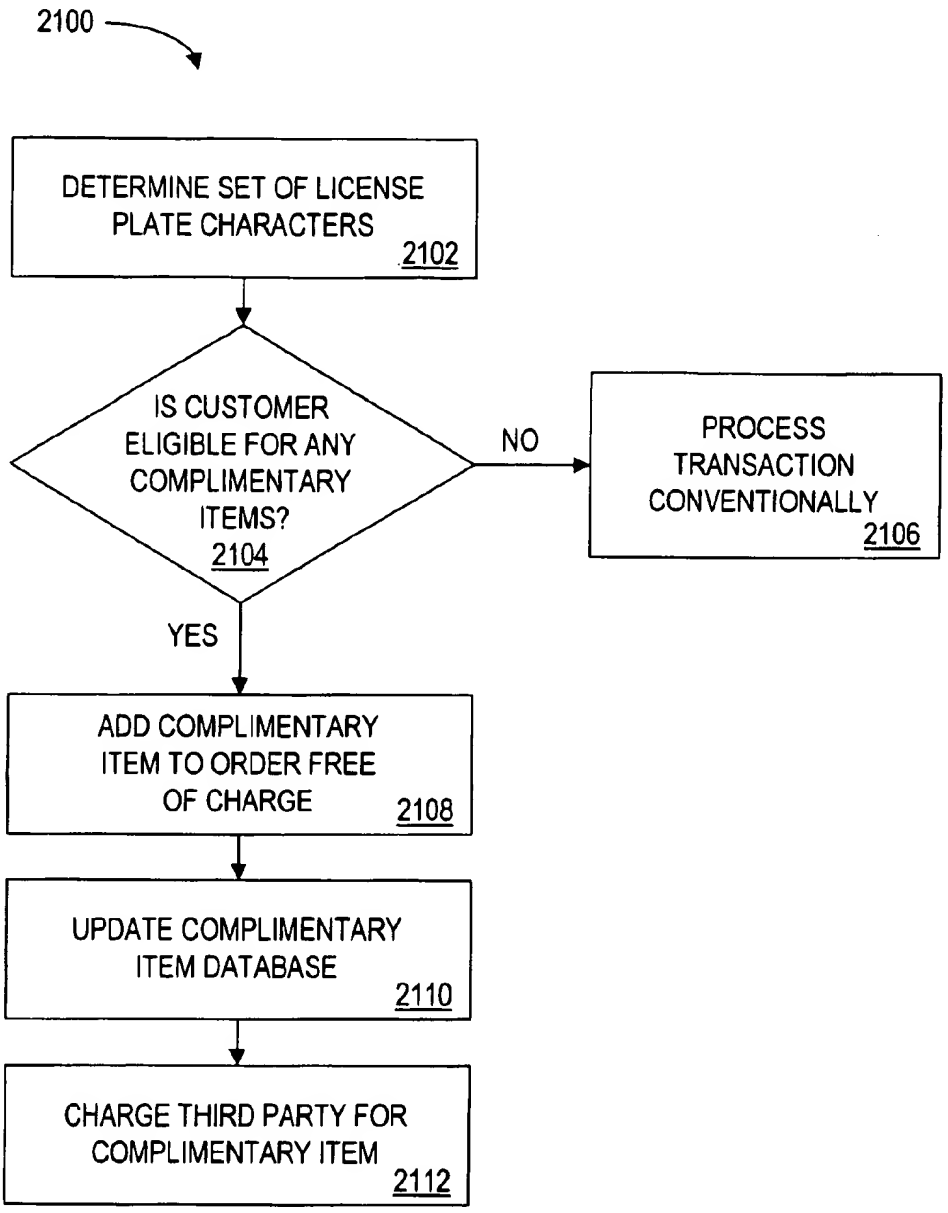
2100
DETERMINE SET OF LICENSE PLATE CHARACTERS
2102
IS CUSTOMER ELIGIBLE FOR ANY COMPLIMENTARY ITEMS?
2104
NO
PROCESS TRANSACTION CONVENTIONALLY
2106
YES
ADD COMPLIMENTARY ITEM TO ORDER FREE OF CHARGE
2108
UPDATE COMPLIMENTARY ITEM DATABASE
2110
CHARGE THIRD PARTY FOR COMPLIMENTARY ITEM
2112

FIG. 21

METHOD AND APPARATUS FOR MAINTAINING A CUSTOMER DATABASE USING LICENSE PLATE SCANNING

CROSS REFERENCE TO RELATED APPLICATIONS

This application is related to co-pending U.S. patent application Ser. No.09/166,367 entitled "METHOD AND APPARATUS FOR PROVIDING A DISCOUNT TO A CUSTOMER THAT PARTICIPATES IN TRANSACTIONS AT A PLURALITY OF MERCHANTS" filed on Oct. 5, 1998 in the name of Jay S. Walker, Andrew S. Van Luchene, Magdalena Mik and Daniel E. Tedesco; and is further related to co-pending U.S. patent application Ser. No. 09/166,405 entitled "METHOD AND APPARATUS FOR DEFINING ROUTING OF CUSTOMERS BETWEEN MERCHANTS" filed on Oct. 5, 1998 in the name of Jay S. Walker, Andrew Van Luchene, Daniel E. Tedesco, Magdalena Mik and James A. Jorasch, each of which is assigned to the assignee of the present application and each of which is incorporated by reference herein as part of the present disclosure.

FIELD OF THE INVENTION

The present invention relates to methods and apparatus for creating and maintaining customer information.

BACKGROUND OF THE INVENTION

Many quick-service restaurants and other businesses have a "drive-through" which allows customers to place an order and also receive the ordered items without exiting their vehicle. A typical drive-through is a roadway equipped with a speaker and microphone to allow a customer in a vehicle to interact with a cashier operating a remote point-of-sale (POS) terminal.

A drive-through allows customers to make purchases more conveniently, and consequently businesses with drive-throughs tend to promote customer satisfaction and customer loyalty.

However, applicants have recognized that drive-through customers may be provided with additional benefits. In particular, drive-through customers may be provided with customized benefits in a manner not addressed by the prior art.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide drive-through customers with customized benefits.

In accordance with the present invention, an apparatus is provided for generating an image of a license plate and determining license plate characters from the image. Then, a database is searched to determine if there is a customer record that corresponds to the license plate characters. If so, the customer record is retrieved and information about the customer is available. Otherwise, a customer record is created. The created customer record corresponds to the license plate characters and stores transaction data that represents a transaction.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic illustration of an apparatus provided in accordance with the present invention.

FIG. **2** is a schematic illustration of another embodiment of the present invention involving a plurality of merchants.

FIG. **3** is a schematic illustration of a merchant controller of the apparatus of FIG. **1**.

FIG. **4** is a schematic illustration of another embodiment of a merchant controller.

FIG. **5** is a schematic illustration of a POS terminal of the application of FIG. **1**.

FIG. **6** is a schematic illustration of an embodiment of a merchant database of the apparatus of FIG. **1**.

FIG. **7** is a schematic illustration of a record of an embodiment of a customer database of the apparatus of FIG. **1**.

FIG. **8** is a schematic illustration of an embodiment of an inventory database of the apparatus of FIG. **1**.

FIG. **9** is a schematic illustration of an embodiment of a remote order database of the apparatus of FIG. **1**.

FIG. **10** is a schematic illustration of an embodiment of an order database of the apparatus of FIG. **1**.

FIG. **11** is a schematic illustration of a record of an embodiment of a complimentary item database of the apparatus of FIG. **1**.

FIG. **12** is a schematic illustration of a record of an embodiment of a custom price database of the apparatus of FIG. **1**.

FIG. **13** is a schematic illustration of a record of an embodiment of a default order database of the apparatus of FIG. **1**.

FIG. **14** is a flow chart illustrating an embodiment of a method for maintaining a database using license plate scanning.

FIG. **15A** is a flow chart illustrating an embodiment of a method for receiving a remote order.

FIG. **15B** is a flow chart illustrating an embodiment of a method for further processing a remote order.

FIG. **16A** is a flow chart illustrating an embodiment of a method for establishing a default order.

FIG. **16B** is a flow chart illustrating an embodiment of a method for processing a default order.

FIG. **17** is a flow chart illustrating an embodiment of a method for displaying custom prices of a customer.

FIG. **18** is a flow chart illustrating an embodiment of a method for displaying custom menu arrangements of a customer.

FIG. **19** is a flow chart illustrating an embodiment of a method for generating an offer for a customer based on past transactions of the customer.

FIG. **20** is a flow chart illustrating an embodiment of a method for providing a bonus to a customer based on his past transactions.

FIG. **21** is a flow chart illustrating an embodiment of a method for awarding complimentary items to a customer.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Heretofore, restaurants and other businesses have not been able to differentiate between drive-through customers, much less customize orders (sets of items to be purchased) for drive-through customers or otherwise benefit from the ability to identify drive-through customers. In particular, in accordance with the present invention a database of customer information may be created in a passive, unobtrusive manner without forcing customers or merchants to depart from their existing practices. Applicants are unaware of any such prior art systems for providing additional benefits to drive-through customers. Since customers may be identified by their license plates, the customers can be provided with

customized service in a manner not recognized or described by the prior art. For example, customers at a drive-though may be provided with customized services such as (i) custom item prices, (ii) custom menu arrangements, (iii) the ability to collect remotely-ordered items, (iv) the ability to have default orders processed, (v) customized suggestive sale offers, (vi) benefits for participating in many transactions, (vii) benefits for participating in transactions with great frequency, and (viii) the ability to periodically collect items that are complimentary or prepaid.

Referring to FIG. **1**, an apparatus **100** comprises a user communication device in communication with a merchant controller **115**. The user communication device **110** may be for example, a computer or a telephone operated by a customer that places a remote order. Accordingly, the user communication device **110** is typically located remotely from the merchant controller **115**, and may be located in the customer's home. The merchant controller **115** is a computer or similar control device that directs the operation of various devices of a restaurant or other business, as described in further detail below. The merchant controller **115** is typically but not necessarily located in a store building of the business.

The merchant controller **15** is also in communication with POS terminals **120, 125** and **130**. The POS terminals may be, for example, cash registers located in the store building of the business. Although three POS terminals are shown in FIG. **3**, any number of POS terminals may be in communication with the merchant controller **115**.

A menu board display **135**, such as the Digital Menu-Board™ by Siren Technologies of Chicago, Ill, is in communication with the merchant controller **115** and is operable to display items which may be ordered and corresponding prices for the displayed items, as commanded by the merchant controller **115**. The menu board display **135** may be positioned to allow drive-through customers to view the menu board display **135** before (or while) ordering in the drive-through. A speaker **137** and a microphone **138** in communication with the merchant controller **115** allow drive-through customers to communicate with store personnel, such as cashiers operating POS terminals, that operate respective speakers and microphones (not shown) for talking to and listening to the drive-through customers in a manner known in the art. The speaker **137** and the microphone **138** need not be in communication with the merchant controller **115**, but may instead be solely in communication with the corresponding speaker and microphone of store personnel.

Vehicle sensors **140** and **145** are positioned on opposite sides of a roadway **155** such as a drive-through alley in a fast food restaurant. The vehicle sensors **140** and **145** are adapted to detect the presence and/or the absence of a vehicle **150** located on the roadway **155**.

The vehicle sensors **140** and **145** may comprise, for example, pressure sensors located beneath the roadway **155** that detect the weight of the vehicle **150**. Alternately, vehicle sensors **140** and **145** may comprise, respectively, a light transmitter and a receiving photo sensor (an optical detector) that cooperate to detect the presence of the vehicle **150** when the transmitted light is blocked by the vehicle **150** and thus is not received by the receiving photo sensor. Other means for detecting the presence and the absence of a vehicle will be understood by those skilled in the art.

The merchant controller **115** is also in communication with an imaging sampler **160**, which may comprise a video camera that reads ("samples") an image of a license plate **165** attached to the vehicle **150** and generates a corresponding image signal. The image signal may be a digital image. The image sampler **160** may further be operable to focus on the license plate **165** of the vehicle **150**. In alternate embodiments, the merchant controller **115** may direct the focusing on the license plate **165**. Generated image signals are transmitted to the merchant controller **115**, which is operable to store and recognize the characters on the license plate **165**, as described below. For a description of prior art systems for generating images of license plates and determining a set of license plate characters from the image, one of ordinary skilled in the art may refer to U.S. Pat. No. 4,878,248 to Shyu et al.; U.S. Pat. No. 4,817,166 to Gonzalez et al.; and U.S. Pat. No. 5,081,685 to Jones, III et al., each incorporated by reference herein as part of the present disclosure. After the license plate characters have been recognized, the image may be retained for future comparison or analysis, if desired.

Referring to FIG. **2**, in an alternate embodiment of the present invention there may be a plurality of merchant controllers, each directing the operations of a different merchant.

Furthermore, each merchant controller may be centrally controlled, allowing the merchant controllers to cooperate in a manner described below. A user computer **210** is in communication with an Internet service provider ("ISP") computer **220**. The user computer **210** may perform some or all of the functions of the user communication device **110** (FIG. **1**). The user computer **210** is typically a personal computer operated by the customer and equipped to access the Internet or other electronic network. The ISP computer **220** is a computer that enables the user computer **210** to access the Internet in a manner known in the art. Accordingly, the ISP computer **220** may be of the type controlled and/or operated by America Online, Prodigy, or Microsoft for offering Internet connectivity and content to users.

The ISP computer **220** is in turn in communication through the Internet with merchant controllers **230, 240** and **250** in a manner known in the art. In another embodiment of the present invention, the user computer **210** may be provided with access to the Internet by another computer besides the ISP computer **220**, while the ISP computer **220** may enable the merchant controllers to access the Internet.

As is also known in the art, the merchant controllers **230, 240** and **250** may control "web sites" that may be accessed by the user computer **210** upon entering appropriate commands. Each merchant controller may perform some or all of the functions of the merchant controller **115** (FIG. **1**). In particular, each merchant controller may direct the operations of a different store. Although three merchant controllers are shown in FIG. **2**, any number of merchant controllers may be in communication with the ISP computer **220** without departing from the spirit and scope of the present invention.

The ISP computer **220** may perform many of the processes described below as performed by a merchant controller, especially those processes that are performed for more than one merchant controller. The ISP computer **220** may also store data that is used by more than one merchant controller. Accordingly, the ISP computer may centrally control the merchant controllers, as described in detail below.

Referring to FIG. **3**, reference numeral **300** indicates a more detailed illustration of the merchant controller **115** (FIG. **1**) in a single-store embodiment of the present inven-

tion. In an embodiment of the present invention involving a plurality of stores, reference numeral **300** indicates a more detailed illustration of the ISP computer **220** (FIG. **2**) which may centrally control a plurality of merchant controllers.

A processor **302** that comprises one or more conventional microprocessors such as the Intelg Pentium® microprocessor is in communication with a data storage device **304**, such as an appropriate combination of magnetic, optical and/or semiconductor memory. The processor **302** and the storage device **304** may each be (i) located entirely within a single computer or other computing device; (ii) connected to each other by a remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver; or (iii) a combination thereof. For example, reference numeral **300** may represent one or more computers that are connected to a remote computer for maintaining databases.

The processor **302** is also in communication with an input device **306**, a printer **308** and a display device **310**. The input device **306** may comprise a keypad for transmitting input signals to the processor **302**. Other types of input devices are known to those skilled in the art. The printer **308** is for registering indicia on paper or other material. The display device **310** is operative to display at least alphanumeric characters, and thus may be any of a number of known video monitors, liquid crystal displays ("LCD") or light emitting diode ("LED") displays. Many types of input devices and display devices are known to those skilled in the art, and need not be described in detail herein.

The storage device **304** stores a control program **320** for controlling the processor **302**. The processor **302** performs instructions of the control program **320** and thereby operates in accordance with the present invention and particularly in accordance with the methods described in detail herein. The control program **320** furthermore includes program elements that may be necessary, such as an operating system and "device drivers" for allowing the processor **302** to interface with computer peripheral devices, such as the input device **306**, the printer **308** and the display device **310**. Appropriate device drivers and other necessary program elements are known to those skilled in the art and need not be described in detail herein.

The storage device **304** also stores (i) a merchant database **322**, (ii) a remote order database **324**, (iii) an order database **326**, (iv) a complimentary item database **328**, (v) a custom price database **330**, and (vi) a default order database **332**. In addition, other devices (e.g. the merchant controllers) may obtain information from the databases stored by the storage device **304**. As will be understood by those skilled in the art, the schematic illustrations and accompanying descriptions of the databases presented herein are exemplary arrangements for stored representations of information. A number of other arrangements may be employed besides the tables shown. Similarly, the illustrated entries represent exemplary information, but those skilled in the art will understand that the number and content of the entries can be different from those illustrated herein.

Referring to FIG. **4**, in an embodiment of the present invention involving a plurality of stores, reference numeral **400** indicates a more detailed illustration of a merchant controller. A processor **402** comprises one or more conventional microprocessors such as the Intel® Pentium® microprocessor. The processor **402** is in communication with a data storage device **404**, such as an appropriate combination of magnetic, optical and/or semiconductor memory. The processor **402** and the storage device **404** may each be (i) located entirely within a single computer or other computing device; (ii) connected to each other by a remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver; or (iii) a combination thereof. For example, reference numeral **400** may represent one or more computers that are connected to a remote computer for maintaining databases.

The processor **402** is also in communication with an input device **406**, a printer **408** and a display device **410**. The input device **406** preferably comprises a keypad for transmitting input signals to the processor **402**. The printer **408** is for registering indiciaon paper or other material. The display device **410** is operative to display at least alphanumeric characters to the customer and/or cashier, and thus may be any of a number of known video monitors, liquid crystal displays ("LCD") or light emitting diode ("LED") displays. Many types of input devices, printers and display devices are known to those skilled in the art, and need not be described in detail herein.

The storage device **404** stores a control program **420** for controlling the processor **402**. The processor **402** performs instructions of the control program **420** and thereby operates in accordance with the present invention and particularly in accordance with the methods described in detail herein. The control program **420** furthermore includes program elements that may be necessary, such as an operating system and "device drivers" for allowing the processor **402** to interface with computer peripheral devices. Appropriate device drivers and other necessary program elements are known to those skilled in the art and need not be described in detail herein.

The storage device **404** also stores (i) an inventory database **422**, and (ii) a customer database **424**. In another embodiment, one or more POS terminals may store one or more of the databases **422** and **424**. The databases **422** and **424** are described in detail below and depicted with exemplary entries in the accompanying figures. As will be understood by those skilled in the art, the schematic illustrations and accompanying descriptions of the databases presented herein are exemplary arrangements for stored representations of information. A number of other arrangements may be employed besides the tables shown. Similarly, the illustrated entries represent exemplary information, but those skilled in the art will understand that the number and content of the entries can be different from those illustrated herein.

Referring to FIG. **5**, a POS terminal **500** is descriptive of any or all of the POS terminals **120**, **125** and **130** (FIG. **1**). The POS terminal **500** may be, for example, the NCR 7454 manufactured by NCR Corporation or the IBM 4683 manufactured by International Business Machines. The POS terminal **500** includes a processor **502** that comprises one or more conventional microprocessors such as the Intel® Pentium® microprocessor. The processor **502** is in communication with a data storage device **504**, such as an appropriate combination of magnetic, optical and/or semiconductor memory. The processor **502** and the storage device **504** may each be (i) located entirely within a single computer or other computing device; (ii) connected to each other by a remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver; or (iii) a combination thereof. For example, the POS terminal **500** may comprise one or more computers that are connected to a remote computer for maintaining databases.

The processor **502** is also in communication with an input device **506**, a printer **508** and a display device **510**. The input device **506** may comprise one or more of (i) a keypad for transmitting input signals to the processor **502**; (ii) a card

reader for reading magnetically-encoded information on cards passed therethrough, such as credit cards, frequent shopper cards and identity cards; (iii) an optical scanner for reading bar codes, such as bar codes registered on items of inventory; and (iv) a touch screen for generating signals that indicate when and where the screen has been touched, pressed or actuated. The printer **508** is for registering indicia on paper or other material, thereby printing receipts, coupons and vouchers as commanded by the processor **502**. The display device **510** is operative to display at least alphanumeric characters to the customer and/or cashier, and thus may be any of a number of known video monitors, liquid crystal displays ("LCD") or light emitting diode ("LED") displays. Many types of input devices, printers and display devices are known to those skilled in the art, and need not be described in detail herein.

The storage device **504** stores a control program **520** for controlling the processor **502**. The processor **502** performs instructions of the control program **520** and thereby operates in accordance with the present invention and particularly in accordance with the methods described in detail herein. The control program **520** furthermore includes program elements that may be necessary, such as an operating system and "device drivers" for allowing the processor **502** to interface with computer peripheral devices. Appropriate device drivers and other necessary program elements are known to those skilled in the art and need not be described in detail herein.

Referring to FIG. **6**, a table **600** illustrates an embodiment of the merchant database **322** (FIG. **3**). The table **600** includes entries **602**, **604** and **606**, each of which describes a merchant that owns, operates or controls a merchant controller. It will be understood by those skilled in the art that the table **600** may include any number of entries. The table **600** also defines fields for each of the entries **602**, **604** and **606**, which specify (i) a merchant identifier **620** for uniquely identifying the merchant, (ii) a name **622** of the merchant, (iii) an address **624** of the merchant, (iv) a standard industry classification ("SIC") code **626** of the merchant which defines a merchant class of the merchant.

Referring to FIG. **7**, a table **700** illustrates a record of the customer database **424** (FIG. **4**). In such an embodiment, the customer database **424** typically includes a plurality of records, each of which includes information about a customer. Such information is typically collected during transactions with the customer. The table **700** includes a set of license plate characters **702**. In one embodiment, the license plate characters include (i) alphanumeric characters corresponding to those on the license plate of the customer's vehicle, and (ii) a two-letter code indicating the state of registration of the license plate. Although one set of license plate characters is shown in FIG. **7**, a record of the customer database **424** may include a plurality of sets of license plate characters. Such an embodiment is advantageous in that a customer that drives more than one vehicle may be identified by the license plate of each of his vehicles.

The table **700** also includes a name **704** and address **706** of the customer, if available. The table **700** also includes a credit card number **708** that indicates a credit card account that has been used by the customer in a previous transaction, and a default order **710** for the customer, which is described in detail below.

The table **700** also includes entries **712** and **714**, each of which describes a transaction in which the customer participated. It will be understood by those skilled in the art that the table **700** may include any number of entries. The table **700** also defines fields for each of the entries **712** and **714**, which specify (i) a transaction identifier **720** that uniquely identifies the transaction, (ii) a merchant identifier **722** that identifies a merchant with which the customer participated in the transaction, (iii) a date and time **724** of the transaction, and (iv) a purchase price **726** of the transaction. The transaction data (e.g. items ordered, date and time of order, purchase price of order) that represents transactions may also be stored in a transaction database.

Referring to FIG. **8**, a table **800** illustrates an embodiment of the inventory database **422** (FIG. **4**). The table **800** includes entries **802**, **804**, **806** and **808**, each of which describes an item of inventory that is sold by a merchant. It will be understood by those skilled in the art that the table **800** may include any number of entries. The table **800** also defines fields for each of the entries **802**, **804**, **806** and **808**, which specify (i) an inventory identifier **820** for uniquely identifying the item of inventory, (ii) a description **822** of the item of inventory, and (iii) a price **824** for which the item of inventory is sold.

Referring to FIG. **9**, a table **900** illustrates an embodiment of the remote order database **324** (FIG. **3**). The table **900** includes entries **902**, **904** and **906**, each of which describes an order that was placed by a customer that was located remotely from the merchant. It will be understood by those skilled in the art that the table **900** may include any number of entries. The table **900** also defines fields for each of the entries **902**, **904** and **906**, which specify (i) a remote order identifier **920** for uniquely identifying the remote order, (ii) a date and time **922** when the items were remotely ordered, (iii) the license plate characters **924** that will identify the customer's vehicle when the customer claims his order, (iv) the items ordered **926**, and (v) the merchant identifier **928** of the merchant, if any with which the order was placed.

Referring to FIG. **10**, a table **1000** illustrates an embodiment of the order database **326** (FIG. **3**). The table **1000** includes entries **1002**, **1004** and **1006**, each of which describes a placed order that was consummated by having the customer purchase and receive the ordered items. It will be understood by those skilled in the art that the table **1000** may include any number of entries. The table **1000** also defines fields for each of the entries **1002**, **1004** and **1006**, which specify (i) an order identifier **1020** for uniquely identifying the order, (ii) the merchant identifier **1022** of the merchant with which the order was consummated, (iii) a date and time **1024** when the items were received by the customer, (iv) a purchase price **1026** paid for the order, (v) the license plate characters **1028** that identify the customer's vehicle, (vi) the items purchased **1030**, (vii) offers **1032**, if any, that were provided to the customer, and (viii) an indication of whether the offer was accepted **1034**.

Referring to FIG. **11**, a table **1100** illustrates a record of an embodiment of the complimentary item database **328** (FIG. **3**). The complimentary item database **328** typically includes a plurality of such records, each describing one or more items that a customer is entitled to free of charge. The table **1100** includes a customer identifier **1102** that identifies the customer. The table **1100** also includes an entry **1104** that describes an item that the customer is entitled to free of charge. It will be understood by those skilled in the art that the table **1100** may include any number of entries. The table **1100** also defines fields for each entry, which specify (i) a complimentary item identifier **1120** that uniquely identifies the customer's complimentary item, (ii) a number **1122** of the complimentary items remaining to be received by the customer, (iii) a date **1124** that the complimentary item was last received by the customer, and (iv) a time period **1126**

within which no more than one complimentary item may be received by the customer.

Referring to FIG. **12**, a table **1200** illustrates a record of an embodiment of the custom price database **330** (FIG. **3**). The custom price database **330** typically includes a plurality of such records, each describing one or more items that a customer may purchase for a price different than the retail price. Typically, each custom price is generated for an item based on the customer information such as past transactions of the customer. For example, a customer may be afforded a custom price for an item he purchases a predetermined number of times.

The table **1200** includes a customer identifier **1202** that identifies the customer. The table **1200** also includes entries **1204** and **1206** that each describe an item that the customer may purchase for a "custom price". It will be understood by those skilled in the art that the table **1200** may include any number of entries. The table **1200** also defines fields for each of the entries **1204** and **1206**, which specify (i) an inventory identifier **1220** that uniquely identifies the item, (ii) a description **1222** of the item, (iii) a custom price **1224** of the item, and (iv) any restrictions **1226** that must be satisfied in order for the customer to be able to pay the custom price.

Referring to FIG. **13**, a table **1300** illustrates a record of an embodiment of the default order database **332** (FIG. **3**). The default order database **332** typically includes a plurality of such records, each describing default orders that are offered to a customer upon recognizing the customer. The table **1300** includes a customer identifier **1302** that identifies the customer.

The table **1300** also includes entries **1304**, **1306** and **1308** that each describe a default order and conditions under which the default order is offered to the customer. It will be understood by those skilled in the art that the table **1300** may include any number of entries. The table **1300** also defines fields for each of the entries **1304**, **1306** and **1308**, which specify (i) the items, also known as default items, included in the default order **1320**; and (ii) an indication of when the default order is "active" **1322** (to be offered). The default order database **332** may further store default items that are customized versions of conventional items (e.g. a cheeseburger with extra cheese and no ketchup). Such default items could also be displayed by the menu board display **135** (FIG. **1**) to the customer.

In general, information stored about a customer is considered to be stored in a "customer record". Accordingly, each of a plurality of customer records corresponds to a customer. Information that is stored in the customer database **424** may be considered part of a respective customer record. In addition, the data stored in the complimentary item database **328**, the custom price database **330** and/or the default order database **332** may also be considered part of a respective customer record. Similarly, the data stored in the complimentary item database **328**, the custom price database **330**, and the default order database **332** may instead be stored in the customer database **424**. Further data may be stored for each customer. For example, each time the an image of a license plate is generated, the image may be stored in the customer record for future comparison and/or analysis.

Referring to FIG. **14**, a flow chart **1400** illustrates an embodiment of a method provided in accordance with the present invention. A signal is received from the vehicle sensors **140** and **145** (FIG. **1**), in which the signal generally indicates the presence of a vehicle in the drive-through (step **1402**). The **140** and **145** vehicle sensors transmit the signal to the merchant controller **115** (FIG. **1**). In response, merchant controller **115** directs the imaging sampler **160** to focus on and generate an image of the license plate of the vehicle (step **1404**). The imaging sampler **160** in turn transmits a signal representing the image to the merchant controller **115**.

The merchant controller **115** determines from the image a set of license plate characters of the license plate (step **1406**). The merchant controller **115** may perform optical character recognition (OCR) on the image of in order to determine the set of license plate characters. OCR is a process in which an image of characters is analyzed to determine the shapes of the characters by detecting patterns of dark and light. Once the shapes are determined, character recognition methods (pattern matching with stored sets of characters) are used to translate the shapes into computer text. Sometimes OCR is done with special readers, but often it is done using a standard imaging sample and specialized software. The merchant controller **115** may also determines the state of registration of the license plate, for example, with reference to the colors of the license plate.

The customer database **424** (FIG. **4**) is searched to determine if there is a customer record that corresponds to the set of license plate characters (step **1408**). Typically, if the vehicle has never had its license plate scanned as described above, there will be no corresponding customer record. If no customer record exists, then a customer record is created (step **1410**). The created customer record will correspond to the set of license plate characters.

For example, referring again to the table **700** (FIG. **7**), a new record of the customer database **424** may be created and the set of license plate characters may be stored in the field **702** of the record. Transaction data is received (step **1412**) and stored in the corresponding customer record (step **1414**).

Referring to FIG. **15A**, a flow chart **1500** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer located remotely from the store place s an order. The merchant controller **115** (FIG. **1**) receives a remote order (step **1502**) from the user communication device **110** (FIG. **1**). For example, a customer may submit a remote order using a computer to access a web site, or using a telephone to access an interactive voice response unit ("VRU"). The merchant controller **115** also receives from the customer the set of license plate characters (step **1504**) to identify the customer when the order is collected. The customer may further specify, for example, an intended time of collection of the order and/or a merchant from which to collect the order if more than one merchant may satisfy the order . In response to the information received from the customer, a record is created in the remote order database **324** (FIG. **3**). The record would be identified by the set of license plate characters and would indicate the remote order.

Referring to FIG. **15B**, a flow chart **1550** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer collects a remotely-placed order. The merchant controller **115** determines a set of license plate characters of a customer's vehicle (step **1552**) as described above. The remote order database is then searched for a record corresponding to this set of license plate characters (step **1554**). If it is determined that there is no such corresponding record (step **1556**), then the transaction is processed conventionally (step **1558**).

Otherwise, the remotely ordered items are determined from the corresponding record of the remote order database

(step **1560**). The remotely ordered items are then registered as ordered items (step **1562**) as if the customer had placed the order at the drive-through. The credit card account (or other financial account) of the customer, if any, is also determined from the remote order record (step **1564**). Alternatively, the account of the customer may be determined by referring to a record of the customer database, if the customer had previously used his credit card account to pay for a transaction. The account is charged (step **1566**) (or payment is otherwise rendered) in an amount equal to the purchase price of the order, and the merchant controller outputs a command to assemble the remotely ordered items (step **1568**), if necessary, to the kitchen staff in a manner known in the art.

Referring to FIG. **16A**, a flow chart **1600** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer desires to make his current order the "default order", thereby allowing the merchant to sell him his desired items without specifying those items again. The merchant controller **115** (FIG. 1) determines a set of license plate characters of the customer's vehicle (step **1602**) and receives an indication of the items the customer is ordering (step **1604**) as described above. The customer is asked if his current order should be his default order (step **1606**). The customer responds, and the response is received (step **1608**) by, for example, actuating a key on a POS terminal. If the customer response is affirmative (step **1610**), then the ordered items are stored as the default order of the customer (step **1612**). For example, the corresponding customer record may indicate the default order in the field **710** (FIG. **7**). Alternatively, an appropriate record of the default order database **332** (FIG. **3**) may be created or adjusted to reflect the default order, as well as any restriction on when the default order would be active. The remainder of the transaction is then processed as described above (step **1614**). In an alternate embodiment, each item of the order may be designated as a "default item", rather than the entire order being designated a "default order".

Referring to FIG. **16B**, a flow chart **1650** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a default order is registered as the customer's order. The merchant controller **115** (FIG. 1) determines a set of license plate characters of a customer's vehicle (step **1652**) as described above. If the corresponding customer record does not indicate that the customer has a default order (step **1654**), then the transaction is processed conventionally (step **1656**).

Otherwise, the default order of the customer is determined (step **1658**) and the customer is asked whether he would like the default order (step **1660**). The default order may be read by the cashier to the customer, and/or the default order may be displayed on the menu board display **135** (FIG. 1). The customer's response is received (step **1662**) and if it is determined that the response is affirmative (step **1664**) then the items of the default order are registered as ordered items (step **1666**).

Referring to FIG. **17**, a flow chart **1700** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer is able to purchase an item for a custom price, which is typically less than the retail price of the item. The merchant controller **115** (FIG. 1) determines a set of license plate characters of a customer's vehicle (step **1702**) as described above. If the corresponding customer record does not indicate that the customer has one or more custom prices (step **1704**), then the transaction is processed conventionally (step **1706**). Otherwise, the corresponding items and custom prices are displayed on the menu board display (step **1708**). If the customer chooses to order any of the items having custom prices, then the custom prices are charged rather than the retail prices.

Referring to FIG. **18**, a flow chart **1800** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer has an associated custom menu arrangement. For example, based on past transactions of the customer, the most frequently purchased items may be displayed more prominently (e.g. at the top of the menu board display **135** or centrally located on the menu board display **135**).

The merchant controller **115** (FIG. **1**) determines a set of license plate characters of a customer's vehicle (step **1802**) as described above. If the corresponding customer record does not indicate that the customer has a custom menu arrangement (step **1804**), then the transaction is processed conventionally (step **1806**). Otherwise, the menu board display displays the items and prices according to the custom arrangement (step **1808**).

Referring to FIG. **19**, a flow chart **1900** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed to provide an offer to a customer based on his past transactions. For example, based on past transactions of the customer, the most frequently purchased items may be offered if it has not been ordered presently, or an item that has never been purchased may be offered.

The merchant controller **115** (FIG. **1**) determines a set of license plate characters of a customer's vehicle (step **1902**) as described above. The past transactions of the customer are determined (step **1904**), typically by referring to the customer database **424** (FIG. **4**). Transaction data is then received (step **1906**) as described above. An offer that is based on previously ordered items is then generated (step **1908**). For example, if a previously-ordered item does not match any of the ordered items, that previously-ordered item may be offered to the customer. Similarly, the offer may be for an item that has never been ordered. An indication of the offer is output (step **1910**), for example by displaying text on a POS terminal which may be read by the cashier. If the offer is accepted (step **1912**), then the offered item is added to the order (step **1914**). Then, the transaction is processed conventionally (step **1916**).

Referring to FIG. **20**, a flow chart **2000** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed to determine if a customer is a frequent patron of the merchant or if the customer has rarely or never frequented the merchant. The merchant controller **115** (FIG. **1**) determines a set of license plate characters of a customer's vehicle (step **2002**) as described above. The merchant controller **115** then determines the number of past transactions (step **2004**) that the customer has had with this merchant (step **2004**), typically by referring to the customer database **424** (FIG. **4**).

If the number of transactions is below a first predetermined threshold (step **2006**), then the customer is an infrequent customer, and it would be advantageous to prompt future patronage. Accordingly, the customer may be provided with a bonus (step **2008**) such as a coupon redeemable at the merchant. In an alternate embodiment, the customer may be provided with an offer, such as an offer for a

supplementary product in exchange for an amount of change due him. If the number of transactions is above a second predetermined threshold (step **2010**), then the customer is a frequent customer, and it would be advantageous to reward the customer for his patronage. Accordingly, the customer may be provided with a bonus (step **2012**) such as a discount.

In a related embodiment, the number of transactions of the customer and the number of merchants visited by the customer may be determined from the customer record. It can be especially advantageous to determine if and how often the customer has participated in transactions with any of a set of merchants, such as different franchisees of a particular retailer. If the customer has participated in transactions with more than one merchant of the set more than a predetermined number of times, a bonus could be provided to prompt future patronage at one of the merchants. For example, if a customer has participated in transactions with more than one merchant of the group of related franchisees more than three times per month, a bonus could be provided to prompt future patronage at one particular franchisee. Other variations will be apparent to those skilled in the art.

The above-described embodiment is especially advantageous when a set of stores are commonly owned and the owner would like customers to be directed to one of the stores (e.g. the one with the lowest sales). Often, an owner of several stores all within a short distance of the others will find one store to suffer much lower sales than the rest. The owner could assure that customers would be provided with a bonus to prompt future patronage at one, but not the remaining, commonly-owned stores.

Referring to FIG. **21**, a flow chart **2100** illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed to allow a customer to periodically collect items that are complimentary or prepaid.

The merchant controller **115** (FIG. **1**) determines a set of license plate characters of a customer's vehicle (step **2102**) as described above. The merchant controller **115** then determines if the customer is eligible for any complimentary items (step **2104**), typically by referring to the appropriate record of the complimentary item database **328** (FIG. **3**). For example, the number remaining must be greater than zero and no complimentary item may have been received within the specified time period. If the customer is not eligible, the transaction is processed conventionally (step **2106**).

Otherwise, the complimentary item is added free of charge to the order (step **2108**), thereby registering the complimentary item as an ordered item. The appropriate record of the complimentary item database **328** is updated (step **2110**) to reflect the new number remaining (field **1122**) and the new date the complimentary item was last received (step **1124**). If desirable, a third party is charged for the complimentary item (step **2112**). For example, a set of complimentary items may be purchased for the customer on behalf of a third party who is charged initially or when the complimentary items are received. In another embodiment, the set of complimentary items may have been purchased in advance by the customer. Accordingly, no third party would need to be charged.

Customers may change license plates. For example, a customer may buy another vehicle that has a new set of license plate characters on its license plate. Rather than having a new customer record created for the new set of license plate characters, the customer may associate the new set of license plate characters with the customer record that corresponds to the old set of license plate characters. For example, the new set of license plate characters may be stored in the field **702** (FIG. **7**) of the corresponding customer record. The new license plate characters may be entered in a number of ways, such as by the customer via a kiosk or a web site, or by a cashier operating a POS terminal.

The present invention may be used to collect information about customers and their patronage. Such information may in turn be advantageously employed by various merchants to determine "repeat customers". The above-described databases may be searched to determine, for example, how many customers visit the store more than once per month and how many of the customers that visited the store in the current month had also been to the store last month. In such an embodiment, the imaging scanner and vehicle sensors may be located in an alley through which vehicles must pass to enter a parking lot. Thus, even customers that do not place orders in a drive-through may have their license plates read and processed as described above.

Although the present invention has been described with respect to a preferred embodiment thereof, those skilled in the art will note that various substitutions may be made to those embodiments described herein without departing from the spirit and scope of the present invention.

What is claimed is:

1. A method for maintaining a database using license plate scanning, comprising:

generating an image of a license plate of a customer in a drive through;

determining a set of license plate characters from the image; and

determining a record that corresponds to the set of license plate characters,

in which the record stores data representing an order.

2. The method of claim **1**, further comprising:

creating, if there is not a customer record that corresponds to the license plate characters, a customer record that corresponds to the set of license plate characters.

3. The method of claim **2** in which the created customer record further includes transaction data that represents a transaction.

4. The method of claim **1**, further comprising:

determining if the set of license plate characters matches any of a plurality of sets of license plate characters.

5. The method of claim **1** in which the step of determining a set of license plate characters from the image comprises:

performing an optical character recognition process on the image.

6. The method of claim **1**, further comprising:

receiving a signal that indicates a presence of a vehicle.

7. The method of claim **6** in which the step of generating an image of a license plate is performed in response to receiving the signal that indicates a presence of a vehicle.

8. The method of claim **1**, further comprising:

receiving transaction data that represents a transaction.

9. The method of claim **1**, further comprising:

storing the transaction data in the customer record.

10. The method of claim **9** in which the transaction data represents at least one of:

an item ordered,

a time of the transaction,

a merchant identifier that identifies a merchant,

whether an offer was accepted, and

an account identifier that identifies a financial account.

11. The method of claim 1, further comprising:

storing in the customer record an item represented by the transaction data as a default item.

12. The method of claim 11, further comprising:

receiving, during a subsequent transaction, a command to register the default item as an ordered item.

13. The method of claim 11, further comprising:

registering the default item as an ordered item during a subsequent transaction.

14. The method of claim 11, further comprising:

receiving a signal verifying selection of the default item as an ordered item.

15. The method of claim 1, further comprising:

generating at least one item price for an item based on the customer record.

16. The method of claim 15, further comprising:

displaying the at least one item price.

17. The method of claim 1, further comprising:

selecting at least one item from a plurality of items based on the customer record.

18. The method of claim 17, further comprising:

displaying the at least one item.

19. The method of claim 1, further comprising:

searching a database of remotely ordered items for a remote order record that corresponds to the set of license plate characters.

20. The method of claim 19, further comprising:

determining an remotely ordered item from the remote order record.

21. The method of claim 20, further comprising:

registering the remotely ordered item as an ordered item.

22. The method of claim 20, further comprising:

determining an account from the remote order record; and

charging the account based on a price of the remotely ordered item.

23. The method of claim 20, further comprising:

outputting a command to assemble the remotely ordered item.

24. The method of claim 19, further comprising:

receiving an indication of a remotely ordered item.

25. The method of claim 24, further comprising:

storing the indication of a remotely ordered item in a remote order record of a database of remotely ordered items.

26. The method of claim 1, further comprising:

determining a previously ordered item from the customer record.

27. The method of claim 26, further comprising:

generating an offer based on the previously ordered item.

28. The method of claim 27 in which the step of generating an offer is performed if the previously ordered item does not match an ordered item.

29. The method of claim 27 in which the offer comprises an offer for the previously ordered item.

30. The method of claim 27, further comprising:

outputting an indication of the offer.

31. The method of claim 1, further comprising:

determining from the customer record a number of transactions with a merchant.

32. The method of claim 31, further comprising:

providing a bonus if the number of transactions is below a predetermined threshold.

33. The method of claim 32 in which the bonus comprises a coupon redeemable at the merchant.

34. The method of claim 31, further comprising:

providing an offer if the number of transactions is below a predetermined threshold.

35. The method of claim 34 in which the offer comprises an offer for a product in exchange for an amount of change due.

36. The method of claim 1, further comprising:

determining from the customer record if a number of transactions with a merchant is below a predetermined threshold.

37. The method of claim 1, further comprising:

determining from the customer record a number of merchants visited.

38. The method of claim 1, further comprising:

determining from the customer record a complimentary item.

39. The method of claim 38, further comprising:

determining from the customer record a number of remaining complimentary items.

40. The method of claim 39, further comprising:

registering the complimentary item as an ordered item if the number of remaining complimentary items is greater than a predetermined threshold.

41. The method of claim 40 in which the predetermined threshold is zero.

42. The method of claim 38, further comprising:

determining from the customer record a time period for receiving the complimentary item.

43. The method of claim 42, further comprising:

determining from the customer record whether a complimentary item was received within the time period.

44. The method of claim 43, further comprising:

registering the complimentary item as an ordered item if the complimentary item was not received within the time period.

45. The method of claim 38, further comprising:

registering the complimentary item as an ordered item.

46. The method of claim 45, further comprising:

charging a third party for the complimentary item.

47. An apparatus for identifying a customer in a vehicle, comprising:

means for storing a plurality of records, each record corresponding to a set of license plate characters;

means for determining a set of license plate characters of a license plate of a customer in a drive through;

means for identifying a record that corresponds to the determined set of license plate characters; and

means for creating a record that corresponds to the determined set of license plate characters if no stored record corresponds to the determined set of license plate characters,

in which the record stores data representing an order.

48. The apparatus of claim 47, further comprising:

means for receiving transaction data.

49. The apparatus of claim 48, further comprising:

means for storing the transaction data in the customer record that corresponds to the determined set of license plate characters.

50. The apparatus of claim 47 in which the means for determining a set of license plate characters of a license plate comprises a camera.

51. The apparatus of claim 50 in which the means for determining a set of license plate characters of a license plate comprises a camera that outputs a digital image.

52. The apparatus of claim 50, further comprising:

means for focusing the camera on the license plate.

53. The apparatus of claim 47, further comprising:

a display device for displaying an item and a price of the item.

54. The apparatus of claim 47, further comprising:

means for sensing a presence of a vehicle.

55. The apparatus of claim 54 in which the means for sensing a presence of a vehicle comprises at least one of a pressure sensor and a photo sensor.

56. The apparatus of claim 47, further comprising:

a speaker operable to transmit audio signals to a drive-through customer.

57. The apparatus of claim 47, further comprising:

a microphone operable to receive audio signals from a drive-through customer.

58. An computer readable medium storing at least one record created in accordance with the method of claim 1.

59. An computer readable medium storing at least one record created in accordance with the method of claim 10.

60. An apparatus for identifying a customer in a vehicle at a drive-through, comprising:

means for receiving transaction data about a drive-through customer;

a display device for displaying an item and a price of the item to the drive-through customer;

a speaker operable to transmit audio signals to the drive-through customer;

a microphone operable to receive audio signals from the drive-through customer;

means for sensing a presence of a vehicle of the drive-through customer;

a camera operable to generate an image of a license plate of the vehicle;

means for determining a set of license plate characters of the license plate;

means for storing a plurality of customer records, each customer record corresponding to a set of license plate characters;

means for identifying a customer record that corresponds to the determined set of license plate characters;

means for creating a customer record that corresponds to the determined set of license plate characters if no stored customer record corresponds to the determined set of license plate characters; and

means for storing the transaction data in the customer record that corresponds to the determined set of license plate characters.

61. A method for maintaining a database using license plate scanning, comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining if there is a record that corresponds to the license plate characters;

receiving transaction data that represents a transaction; and

creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing the transaction data,

in which the record stores data representing an order.

62. A method for maintaining a database using license plate scanning, comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining if there is a record that corresponds to the license plate characters; and

creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing transaction data that represents a transaction,

in which the record stores data representing an order.

63. A method for maintaining a database using license plate scanning, comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining a record that corresponds to the license plate characters;

determining a default item from the record;

registering a default item as an ordered item; and

outputting an indication of the default item,

in which the record stores data representing an order.

64. The method of claim 63, further comprising: receiving a signal verifying selection of the default item as an ordered item.

65. An apparatus for maintaining a database using license plate scanning, comprising:

means for generating an image of a license plate of a customer in a drive through;

means for determining a set of license plate characters from the image; and

means for determining a record that corresponds to the set of license plate characters,

in which the record stores data representing an order.

66. An apparatus for maintaining a database using license plate scanning, comprising:

a storage device; and

a processor connected to the storage device,

the storage device storing a program for controlling the processor; and

the processor operative with the program to:

generate an image of a license plate of a customer in a drive through;

determine a set of license plate characters from the image; and

determine a record that corresponds to the set of license plate characters,

in which the record stores data representing an order.

67. A computer readable medium encoded with processing instructions for implementing a method performed by a computer for maintaining a database using license plate scanning, the method comprising:

generating an image of a license plate of a customer in a drive through;

determining a set of license plate characters from the image; and

determining a record that corresponds to the set of license plate characters,

in which the record stores data representing an order.

68. An apparatus for maintaining a database using license plate scanning, comprising:

means for generating an image of a license plate of a customer in a drive through;

means for determining license plate characters from the image;

means for determining if there is a record that corresponds to the license plate characters;

means for receiving transaction data that represents a transaction; and

means for creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing the transaction data,

in which the record stores data representing an order.

69. An apparatus for maintaining a database using license plate scanning, comprising:

a storage device; and

a processor connected to the storage device,

the storage device storing a program for controlling the processor; and

the processor operative with the program to:

generate an image of a license plate of a customer in a drive through;

determine license plate characters from the image;

determine if there is a record that corresponds to the license plate characters;

receive transaction data that represents a transaction; and

create, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing the transaction data,

in which the record stores data representing an order.

70. A computer readable medium encoded with processing instructions for implementing a method performed by a computer for maintaining a database using license plate scanning, the method comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining if there is a record that corresponds to the license plate characters;

receiving transaction data that represents a transaction; and

creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing the transaction data,

in which the record stores data representing an order.

71. An apparatus for maintaining a database using license plate scanning, comprising:

means for generating an image of a license plate of a customer in a drive through;

means for determining license plate characters from the image;

means for determining if there is a record that corresponds to the license plate characters; and

means for creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing transaction data that represents a transaction,

in which the record stores data representing an order.

72. An apparatus for maintaining a database using license plate scanning, comprising:

a storage device; and

a processor connected to the storage device,

the processor operative with the program to:

generate an image of a license plate of a customer in a drive through;

determine license plate characters from the image;

determine if there is a record that corresponds to the license plate characters; and

create, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing transaction data that represents a transaction,

in which the record stores data representing an order.

73. A computer readable medium encoded with processing instructions for implementing a method performed by a computer for maintaining a database using license plate scanning, comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining if there is a record that corresponds to the license plate characters; and

creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing transaction data that represents a transaction,

in which the record stores data representing an order.

74. An apparatus for maintaining a database using license plate scanning, comprising:

means for generating an image of a license plate of a customer in a drive through;

means for determining license plate characters from the image;

means for determining a record that corresponds to the license plate characters;

means for determining a default item from the record;

means for registering a default item as an ordered item; and

means for outputting an indication of the default item,

in which the record stores data representing an order.

75. An apparatus for maintaining a database using license plate scanning, comprising:

a storage device; and

a processor connected to the storage device, the storage device storing a program for controlling the processor; and

the processor operative with the program to:

generate an image of a license plate of a customer in a drive through;

determine license plate characters from the image;

determine a record that corresponds to the license plate characters;

determine a default item from the record;

register a default item as an ordered item; and

output an indication of the default item,

in which the record stores data representing an order.

76. A computer readable medium encoded with processing instructions for implementing a method performed by a computer for maintaining a database using license plate scanning, the method comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining a record that corresponds to the license plate characters;

determining a default item from the record;

registering a default item as an ordered item; and

outputting an indication of the default item,

in which the record stores data representing an order.

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